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Radio Control

47380 October 1992



CAR ACTION

THE WORLD'S PREMIER R/C CAR MAGAZINE

INCLUDES
RACER NEWS

Hottest
NEW
CARS

KYOSHO
INFERNO

TAMIYA
TOP FORCE

TRAXXAS
BLUE EAGLE LS

GAS CHAMPS
WINNER

TURN YOUR
LOSI CAR INTO AN

LX-T!

THE HOLY RAIL:
Home-Built
TOP FUELER

RC THUNDERDROME

PREVIEW

Sneak Peek at the
FASTEST RACE EVER!



INSIDE
JACK
JOHNSON'S
INFERNO

HUGE TRACK
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ON THE COVER: Kyosho's hot new Inferno. (Photo by Steve Pond.) Upper right—paint like the pros! (Photo by Richard Muise.) Right—Jumpin' Jack Johnson holds his rides from the Southeast Gas Championships. (Photo by John Huber.)

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EDITORIAL



THE HARD CELL

Sometimes, change really is for the better. Take batteries, for example. Way back when I first became hooked on R/C, the only batteries available were Sanyo 1200 SCs, Panasonic 1200s and SAFT sub-C cells. These batteries performed well, but they were extremely sensitive to excessive heat and were easily damaged. In addition, we were cautioned by manufacturers to use each battery pack only once a week to prolong its life. We didn't know about discharge rates or internal resistance; for all we knew, the only thing matched about a "matched" pack was that all the cells were the same size and color. In the early days, you needed one pack for each run of the day—period! I can remember running only two of the three rounds of qualifiers simply because I had only two "qualifying" packs and one Main pack.

With the release of Sanyo's "fast-charge" SCR cells, the overall cost of racing actually decreased. The new Sanyos could be charged repeatedly during the same day, so where you once needed at least three packs to race (more if you wanted to practice), you now only needed two packs at the most. What's more, SCR cells are much more durable than the SC cells and have a much better chance of surviving overcharging.

The next advance was the advent of the 1700mAh SCE cell. The SCE gave racers the additional capacity necessary to allow them to use super-hot modified motors. However, the SCE proved to be as sensitive to overheating as the SC cell was and could only be used once a day.

Why am I droning on about the history of batteries? Because I've heard many people voice their concerns about the new "killer" batteries (Panasonic's P-170s and Sanyo's 1700 SCRCs); how they won't be able to afford them; how battery manufacturers are pricing the "little guys" out of the hobby. Yes, the new cells are more expensive than their predecessors, but if you look more closely at the situation, you'll see that the benefits offered by the new batteries outweigh their additional cost. First, these cells are as durable as the 1400mAh SCRs, so they can withstand a marginal abuse with very little reduction in overall performance. Second, it's no longer necessary to purchase different types of cell for each type of racing. The new batteries work very well in both stock and modified class. As an example: I just returned from a typical weekend of club racing. The only batteries I used all weekend, in both stock and modified, were two packs of 1700 SCRs. I used them for practice, for qualifiers and in the Mains. Even though I was constantly recharging the packs (only after discharging them and allowing them to cool to ambient temperature, of course), I noticed absolutely no drop in performance. So, even though they cost more initially, the new breed of batteries will probably save you money in the long run and add to your enjoyment of the hobby. ■

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LETTERS

WRITE TO US! We welcome your comments and suggestions. Letters should be addressed to "Letters," Radio Control Car Action, 251 Danbury Rd., Wilton, CT 06897. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

ATTENTION, SUBSCRIBERS!

You've probably noticed that, effective with the September '92 issue, we've re-introduced protective plastic wraps on your copies of Radio Control Car Action. Our decision earlier this year to discontinue the wrap was based primarily on concerns for the environment; however, many of our readers have told us that, without the protective wrap, their copies of Car Action have occasionally arrived damaged in the mail. We want you to receive a perfect copy of Car Action, ready to read, enjoy and save every month.

Please be assured that we're working closely with our printer to make certain that the new wrap we use is as "environmentally friendly" as possible. LA

R/C TV

I'm not sure how aware you are of Nintendo or Super Nintendo, but I think it would be great if you and Nintendo made a video game about R/C cars and racing. There could be a choice of team racing, e.g., Losi, Associated, or Traxxas, or you could just pick a certain specific car/truck to race. There could also be mud bogs, truck pulls and car-crushing events with your choice of vehicle.

Another idea I have for your magazine is a comic strip or illustrated story page that could plot a young boy's racing career against villain racers. The bad guys would try to keep our young crusader from victory. What do you think?

JERRY RICHARDSON
Mukilteo, WA

Jerry, there's an R/C car video game in the works for the Sega Game Gear system. I don't know what it will be like, but it should be available this summer. You can be sure that we'll report on it ASAP. As for the comic, it sounds cool. I can't think of a name for our hero, but the villains would surely be

Hammer, T-Bone, Dumpy and the ever-sneaky Glitch. (Well, they might not be the best names, but you get the idea.) Now all we need is a name for our hero. Any ideas? JH

REMEMBER THE SLOT CAR?

"Remember the slot car?" I think we've all heard that question before. We all know what it means, and I think that many racers are realizing that we might have a big problem on our hands soon.

I started racing in 1986 with a Marui Galaxy. Back then when you showed up at a track, you could find a variety of cars: Hornets, Grasshoppers, Boxers, Scorpions, Vipers, Radiants and maybe a few RC10s. Half the people there used mechanical speed controllers and 15-minute battery chargers. If you ask hobby-shop owners if entry-level cars still sell, they'll answer yes—but newcomers attend one race (and see the equipment that the racers use) and that's usually the last time you ever see them. Even I, who have raced for a number of years, have decided to give it a rest because I'm finding it difficult to keep up with the high-tech evolution of our pastime—and the price tag that goes along with it.

At the end of last summer, however, a product came along that got some attention in our area—the Impact 10. One-tenth-scale gas on-road racing—what a great idea! If you examine what you spend on electric cars, you might find that gas cars may be the way to go. Many companies seem to be producing cars along these lines.

My opinions are shared by some people in the hobby business who say that the number of racers has been decreasing slowly but surely. I just hope that 1/10-scale gas might jump-start our hobby.

RICHARD BOURDON
Quebec, Canada

RC10 VS. TEAM CAR

I recently purchased a stock RC10 from my uncle for \$20. I was wondering if you could give me a list of parts that the RC10 Team Car has that a regular, basic, stock RC10 doesn't

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T8001 Mono Motor Capacitor

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have. I've already had to shave a little of the back arms to get more suspension travel.

I'd also like to know if the Pro-Line truck conversion kit for the RC10 is the best around. I love your magazines. I think they're the best. I'd like to see a hop-up guide for the RC10.

JONATHAN YOUNG
Mackinaw City, MI

There are several differences between the RC10 and the Team Car. Starting with the rear end, the Team Car has a Stealth tranny; universal-joint drive shafts; new, rear-hub carriers and toe-in blocks. The front end has new, front A-arms; caster blocks; in-line steering axles and a new shock tower. Rounding out the package are hard-anodized hocks, a new Viper body and TQ rims. The Pro-Line truck conversion is one of the better ones out there. If you want to convert to the factory-truck specs, Associated also sells the front and rear suspensions for the RC10T separately.

AS

I CAN'T FIND IT!

I purchased a copy of your magazine after attending a 1/4-scale gas car exhibit. I was surprised to find that there were no articles on those cars. Do you cover 1/4-scale gas cars at all? Thanks.

RODNEY WADDINGTON
Ukiah, CA

If you're interested in 1/4-scale action, check out the "Home-Built Project" in this issue! We're working on more 1/4-scale articles right now; look for them in upcoming issues! AS

YOKOMO SEARCH

I have two R/C cars—a Tamiya Wild One and a Team Losi Junior T. I race the T. I wanted to get a Yokomo Super Dogfighter (YZ-10), but I don't see it in any ads. I'd like to know if any company still sells it. Also, are the shocks on it any good, or will I have to replace them? I'd really like it if you'd publish this letter. Thanks for everything you've done for me.

BRIAN CONROW
Pacifica, CA
(Continued on page 52)

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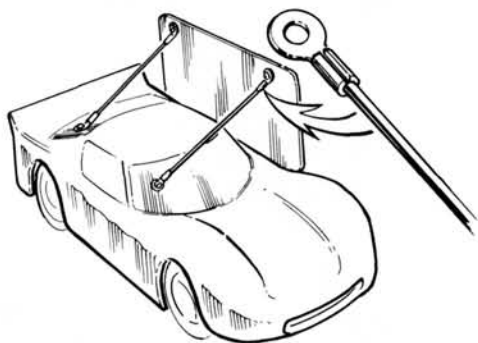
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PIT TIPS

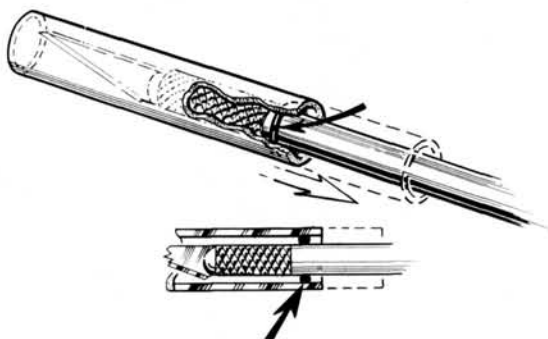
by JIM NEWMAN



SIDE-DAM BRACING

The Lexan strips that brace the side dams can bend and make your car unstable. To make a rigid connection, cut struts from .078-inch-diameter music wire or coat-hanger wire. Solder electrical lugs to their ends, and bolt them to the car.

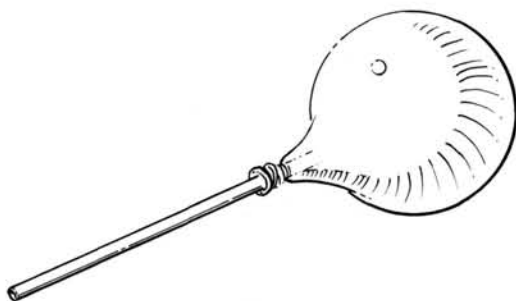
Bill Barr Sr., Tucson, AZ



X-ACTO SAFETY GUARD

Place a rubber band or an O-ring (arrowed) around a knife handle, then slip a plastic tube or hose over the blade and the ring. To expose the blade for cutting, slide the tube toward the top of the handle. The O-ring acts like a roller as the tube is moved up.

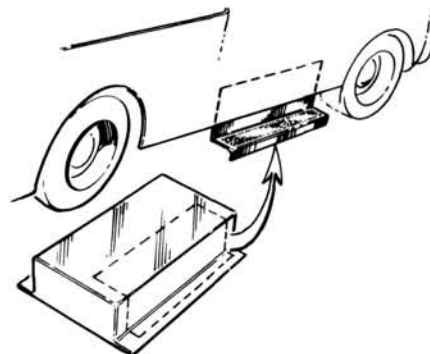
Brian Matthews, Plain City, OH



LOW-COST BLOWER

This blower will remove dirt from your car and motor. All you need is a drinking straw, a rubber band and a balloon.

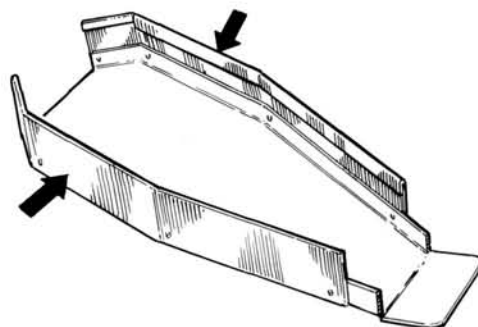
Mufaddal Mullaji, Bombay, India



NO-COST RUNNING BOARDS

To make a neat, molded running board for your truck, cut a piece of plastic out of a discarded blister pack, as shown. Paint it silver, add a strip of 400-grit sandpaper to create a non-slip surface, and the result will be a neat, custom job that your friends will envy.

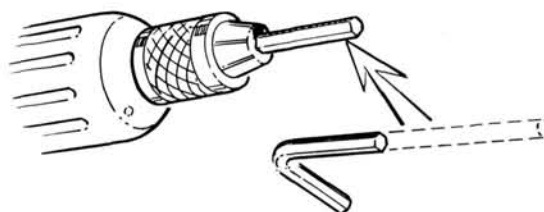
Chris DeVito, Williston Park, NY



SIDEWALL DIRT FENDERS

Use aluminum soda cans to make these sidewalls. Cut the can with scissors, then fold the top edge twice so that the sharp edge isn't exposed. Attach it to the chassis sides with nuts and screws, or use double-sided tape.

Brian Schutzler, Camano Island, WA

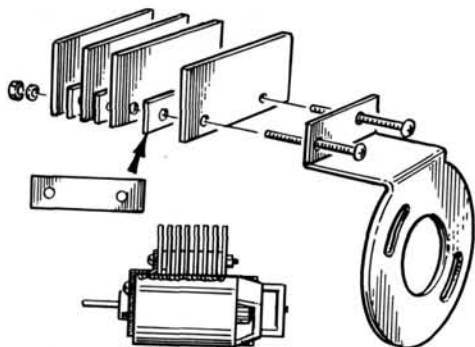


MOTORIZED ALLEN WRENCH

Cut the bent end off an Allen key with a Dremel cut-off wheel; and put the straight piece in the chuck of a cordless, reversible screwdriver or drill. Don't drive the screws in all the way, and do the final tightening by hand to avoid stripping.

William DuBois, Hill AFB

PLEASE NOTE: Be sure to print your name and full address clearly on every letter and sketch you send to Pit Tips. We have to throw away many good tips because we don't have the sender's name or address.



HOMEBUILT HEAT SINK

Out of $\frac{1}{16}$ -inch-thick aluminum, cut rectangular pieces that will fit your motor. Clamp them together with a long screw, a nut and a washer, and use the existing screws on the end of the motor to attach the heat sink to the motor. Try using Thermal Heatsink Paste (from Radio Shack) between the base and the motor case for improved heat transfer.

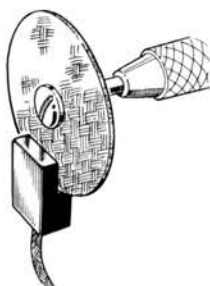
Craig Baxter, Waterloo, Ontario, Canada



POWER PYRAMID STORAGE

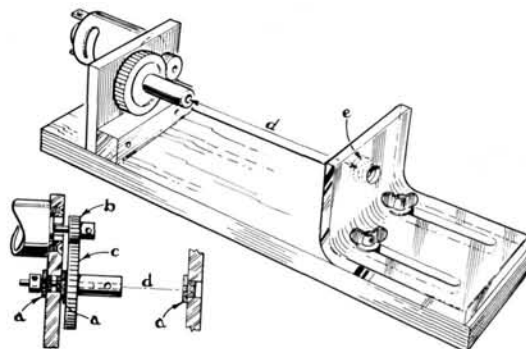
To prevent your work area from becoming a jumble of tangled leads and damaged accessories, hot-glue plastic or cardboard tubes together to form a stack. The tubes' inside diameter should measure about 2 inches, and the lengths should be about 4 inches. They make neat, tidy storage containers for spare motors, battery packs, etc.

Mitch Poling, APO, NY



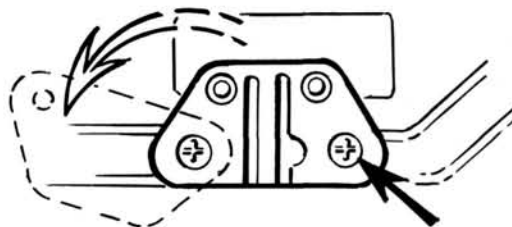
CUT YOUR OWN BRUSHES

Filing brushes is a long, tedious job. Use a House of Balsa reinforced grinding wheel in your Dremel tool or Minimate, and don't forget to wear safety goggles. *Jeff Larson, Des Moines, IA*



CHEAPSKATE COMM MACHINE

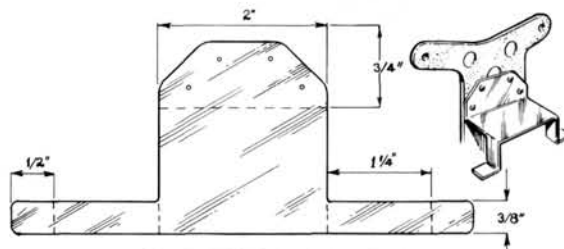
Yes! That's what it's called. This commutator machine is made of $\frac{1}{2}$ x6x1-inch (13x152x305mm) plywood and Plexiglas. It uses bushings from old motors (a), a 32-tooth pinion gear (b) and a Lunchbox counter gear with the smaller gear removed (c). The axis (d) must be parallel with the baseboard, and the center of the counter gear and the tail-stock bushing (e) must be properly aligned. Use any stock motor as the driver, and clean the commutator with strips of 600-grit wet or dry paper. Dry-sand first; then wet the paper for final polishing. *Doug Baldwin, Creston, OH*



FASTER BLACKFOOT BATTERY ACCESS

Instead of removing both screws from the battery holder, remove just one and swing the retainer to one side.

Brian Young, Pearl River, NY



RC10 ESC COOLING

Cut the "chair" from discarded Lexan; then bend it to the shape as shown. Use servo tape on the feet of the "chair," and secure it to the face of the shock tower with small screws. Also, use servo tape to set the ESC on the platform. The ESC now has plenty of ventilation. *Scott Fredrickson, Warren, MN*

INSIDE SCOOP

by CHRIS CHIANELLI



This photo was taken in Atsugi, Japan, with Kyosho Corp. President Mr. H. Suzuki and his wife. We're in a 400-year-old house—now a five-star restaurant and museum—that belonged to a famous samurai. (Behind us is a display of his armor.) Mr. Suzuki was an exemplary host and teacher of Japanese history.

The design brilliance of Jim Dieter is now available in a sprint car. With Trinity's new conversion kit for the ReFlex 10, you get all the necessary components for a competition-worthy 1/10-scale sprinter. The conversion kit includes a chassis plate, nylon roll-cage components, hardware, a body and a wing. Seven cells may be mounted flat to lower the center of gravity. For more information, contact Trinity Products Inc., 1901 E. Linden Ave. #8, Linden, NJ 07036; (908) 862-1705.



SPRINTY



Mr. Mori Matsumoto, General Manager, Foreign Trade Dept. for Kyosho, holds the new F1 chassis.

Remember the new Kyosho F1 cars that I saw in Japan? (They were featured in last month's "Scoop.") Well, low price isn't their only virtue. They'll also be supported by a wealth of after-market parts, so you'll be able to

upgrade them as your budget allows. A graphite chassis, a graphite rear axle, front-spring sets (soft, medium and hard), aluminum oil-filled shocks and a precision ball-diff are just a few of the parts that will be offered at very reason-

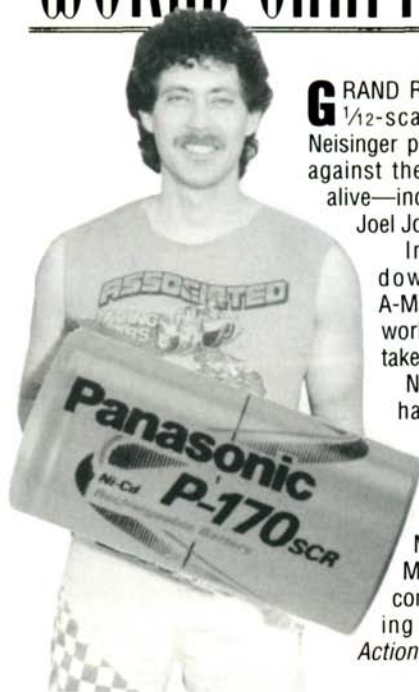
able prices. For this car, Kyosho made a commitment to keep prices as low as possible, and they stuck to it. The F1 car that they've designed could be just right for spec-class racing—a class that's long overdue in America.



WORLD-CLASS WATCHING

Team Associated's new 2-hour video shows you how world-class drivers such as Cliff Lett, Masami Hirosaka and Joel Johnson do it. Although there's very little conversation with them, you really see their smooth driving styles as well as the lines they choose in off-road, on-road and oval races. The footage is from the '91 IFMAR Off-Road Worlds, the Reedy Race of Champs, the ROAR Off-Road Nats, the ROAR 1/12- and 1/10-Scale On-Road Nats and the RC Thunderdrome event. To order, contact Associated Electronics Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626; (714) 850-9342.

WORLD CHAMPS FLASH!



GRAND RAPIDS, MI—Two-time IFMAR 1/12-scale World Champion Tony Neisinger picked up his third Worlds title against the very best 1/12-scale drivers alive—including Masami Hirotsuka and Joel Johnson.

In a heated battle that came down to the last of the three A-Mains, Neisinger edged five-time world champ and TQer Hirotsuka to take the win.

Neisinger's Associated 12LW had a Reedy 16-double Mr. Z motor and Max-Cell conditioned Panasonic P-170s. Interestingly enough, 2nd-place Hirotsuka and 3rd-place Mike Blackstock also used Max-Cell Panasonics. Look for complete coverage in an upcoming issue of *Radio Control Car Action*.



English Ford

With this 1948 English Ford Anglia, Parma International has—once again—come through for nostalgia nuts. If you love dragsters, especially old gassers and “altereds,” you’ll

love this 1/10-scale body. Parma’s 1/10-scale Hemi engine would be the perfect complement to this classic. For more information, visit your local hobby shop.

At this year’s ROAR On-Road Nats in Orlando, FL, Trinity team driver Joel Johnson showed everyone that he truly deserves the title “Magic Man.” In the 1/12-Scale A-Main, he ran away from the pack by a full lap with his Associated 12LW, and when all seemed



Above: Joel in his hour of darkness. **Below:** Joel in his moment of glory.



lost in the 1/10-Scale A-Main, he really “called upon his high power.” Early in the first lap, Joel’s 10L was involved in a high-speed, “traffic jam,” shall we say, and he found himself in last place. As if by wizardry, however, when the “checkered flag” came down, the Magic Man was in first place! And what were this on-road sorcerer’s cells of choice?—

Trinity Pushed Panasonic P-170s. If you want more info about these cells or the motor that Joel used, contact Trinity Products Inc., 1901 E. Linden Ave. #8, Linden, NJ 07036; (908) 862-1705.

T’was a magic show in Orlando



The Trinity Championship Series motors that powered Joel to on-road supremacy. The Helter Skelter, left, was used for 1/10-scale, and the Classic was used for 1/12-scale.

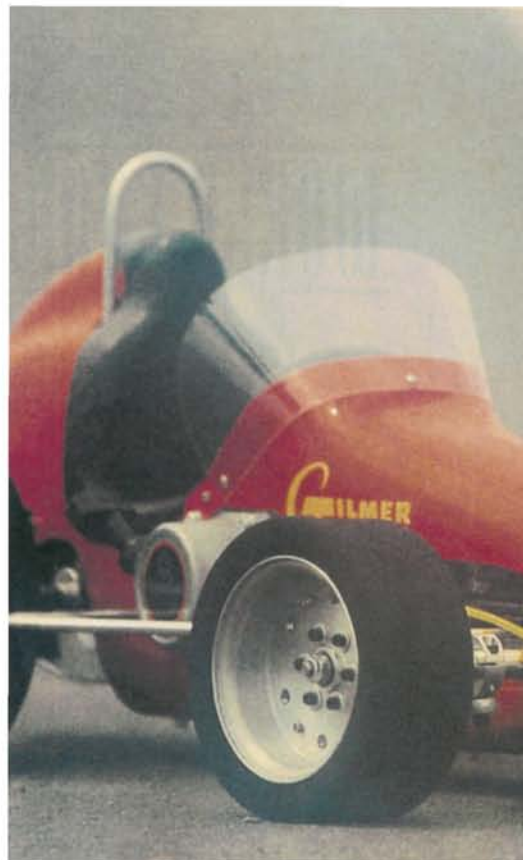


TWIN-PISTON PORSCHE AND GIANT MIDGET

These two prototypes are examples of what's going on in the basements of creative Japanese modelers. Above is a 1/8-scale Porsche 959 body on a modified Pirate chassis. The model has two O.S. .21 engines, which have been "geared together" to make one very powerful, very fast machine! To the right, a modeler holds a



1/5-scale Gilmer Midget. (I know that this model doesn't *look* 1/5-scale, but remember, full-scale Midgets are very small to begin with.) The Midget's all-metal chassis has been fitted with a Kawasaki 22cc gas-ignition engine, which is mounted in the mid/front position so that the model will have accurate scale proportions.



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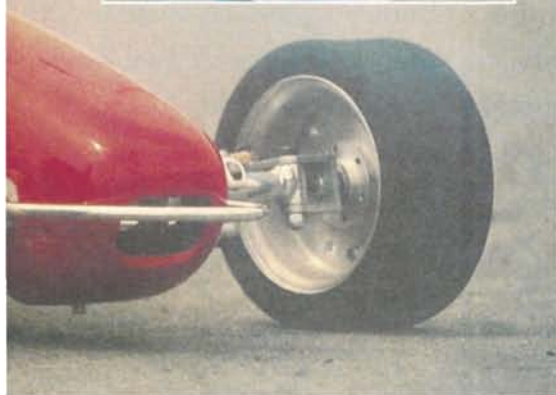
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フォーメーションラップ
がはじまる。



Japanese Jag

Yokomo has fitted a sexy Silk Cut Jaguar GTP body to its 1/10-scale Honda NSX chassis. Like the NSX car, the Jag features a fully independent suspension with oil-filled shocks, a Kevlar direct-drive belt system, a fiberglass chassis plate, a planetary diff and a polyurethane shock-absorbing system that will greatly reduce the chance that the front suspension will be damaged during a crash. For more information, contact Competition Imports, 2691 Viscount Way, Unit 101, Richmond, British Columbia, Canada V6V 1M9; (604) 270-9060.

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NITRO NEWS

TAKIN' IT ON THE ROAD

by JEFF BRONSTEIN

CLUB RACING IS the backbone of competitive R/C racing and, for the vast majority of racers, the local track is more than enough to fulfill their competitive aspirations. But, in every racer's dreams is the desire to race in a National Championship. Well, why not? Once every year, racers from across the country gather to crown a new champion of champions. But more than this, old friends get together to talk about past events and just plain have more fun than should be allowed by law. Most National events aren't just for sponsored racers; they're for racers at every experience level from relative novice to pro. R/C racing is, after all, a family-oriented hobby. If you've never entered a major national event, you're missing the ultimate R/C racing experience. Not everyone makes the A-Main, but the rush of adrenaline during serious competition is what it's all about.

This year, I have the unique honor and privilege of being the race coordinator for the 1/8-scale ROAR National Championships in Albuquerque, NM—one of the crown jewels of competitive R/C motor sports. My only regret is that I won't be able to participate this year as I have for the last few National events. Having been involved in the organization of many sizable races in the past, I can unequivocally state that this event will be like no other. Every major 1/8-scale manufacturer is involved, and so are numerous 1/10-scale

manufacturers. The primary sponsor of the race is none other than the world's premier R/C magazine, *Radio Control Car Action*. In addition to the week's many family-oriented activities, the race will feature the inaugural *Car Action* 1/10-scale Nitro Shootout for 1/10-scale gas cars. During the event, more than 5,000 spectators are expected to fill the grandstands along the back straight. This is the one that shouldn't be missed.

If you're planning to race in a major national event for the first time, here are some hints on how to prepare yourself and your equipment. First, make a list of the equipment that you'll need for the trip. Don't forget chargers for your receiver and transmitter batteries, tire truers, frequency crystals and other "necessary" equipment. Prepare your car and radio as much as possible before you leave. There's enough to do when you get to the race without having to

rebuild engines, shocks or differentials before the qualifying. Many national events have limited entries, so get yours in early. You'll receive information acknowledging your acceptance.

To prepare for a major event, try to anticipate every conceivable mishap. Rule number

one: expect the unexpected. Without a doubt, the first time you break that "unbreakable" part—the one you never keep in your parts box—will be at Nationals or some major race. It never hurts to have a few spare suspension arms, servo-savers, bumpers and other potentially vulnerable components. I also take at least two bodies already trimmed and painted; one for practice and qualifying and one for the main event. Since you generally don't know what the track conditions will be, take as many different sets of tires as possible. Last, but definitely not least, take along your sense of humor. If you take racing too seriously, you won't be able to relax long enough to enjoy everything that makes this hobby great.

Getting to the race can be more of a challenge than actually racing. Many of the more active 1/8-scale clubs travel to major events as a group or team. This can save everyone time and money by dividing the respon-

sibilities. If one or more racers are driving, you may be able to convince them to take your equipment along, while you hop a flight to set up room reservations and race registrations (give the guy some gas money so your stuff gets there, too). When you arrive, try to pit together so the whole experience will be more relaxed. If you must take your equipment with you on the plane, remember to pack it very carefully so Joe Cargo Handler won't toss someone's Louis Vuitton designer trunk onto your expensive new Caliber. Fuel, alcohol and any flammable liquid is a no-no on planes, so either make other arrangements to ship your fuel, or be prepared to buy some when you get there.

When you arrive at the racetrack, always make a quick sketch of its layout,



Always keep your eye on the clock so you'll be ready for the next heat.



A man's (or woman's) pit space is his (or her) castle!



At most big races, amenities such as tables specifically set up for tire truing are provided to make the event more enjoyable.

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and note any particularly rough spots. If you can, get some practice time in as soon as possible, and test one or two initial qualifying setups. Most tracks have plenty of room to set up tent covers or canopies near the track. If possible, find a spot where you can keep an eye on your competition and watch the other races. When the tent poles are up, pick up your registration packet, and buy those T-shirts, so you won't be distracted during practice.

Back at the hotel, re-check your gear so you can get onto the track as soon as possible the next day. It's OK

to meet a few of your competitors or potential trophy girls in the lobby, but get some sleep sometime before the first qualifier. You came to race, so no "schmeckin'" allowed (you guys watch "Studs" don't you?). Here's one little tip before you hit the hay: study your sketch of the track, and imagine driving it as you fall off to sleep. This kind of active imagery really does work to improve your performance almost as much as actual practice.

A number of major races provide an entire day or more for practice before qualifying. You'll learn more about your driving and your car in three or four intense days of racing than you will in an entire series of club racing. But, no matter how much time you think you have, it's generally never enough to prepare completely. Use your practice time wisely. If you take notes regularly on your car's performance, use them to narrow down the possible setups. Make one change at a time, and monitor the results as you go. One or two minutes on the track should be enough to determine whether or not the changes help or hinder your car's performance; then go back to the pits to make additional adjustments.

Once you've tracked down a fairly good setup, leave the car alone until the first qualifier! Then, each following round should be a try-out for other potential improvements. Try to anticipate the changes in track conditions as

the day wears on. Is it warming up? Did the track staff apply VHT or sugar water? Are lap times improving or worsening? Even if your car handles poorly in one round, learn from the information you gather, and apply it to the next qualifier.

If you're able to lock down one



The number-one rule in big-time racing is expect the unexpected. This driver has brought everything in his garage; if something does happen, he'll be prepared.

decent early run, much of the pressure is off until the Mains. This is the perfect time to mingle with other racers in the pits and look at their equipment. You'll see just about everything as you saunter from table to table gazing at different cars and engines. Merely being neighborly with

other racers may provide new ideas to improve your own performance. I've never met a racer who wasn't anxious to talk about race cars and racing, and I've never gone to a race where I didn't meet new friends.

The morning before the Mains, you should double-check everything on the car from bumper to bumper. Inspect even the most improbable weaknesses. The worst way to lose a major race is by overlooking some small detail. Excuses are cheap, but they don't bring home the "hardware" (trophies). When they call your race to the starting line, take one deep breath, and try to remain calm. Major races have a way of turning the best club racers into Jell-O. Anxious racers lose their edge and end up piling into the first corner, taking several others with them. When the flag drops, settle into a steady driving rhythm, and let your instincts take over.

Last, always be realistic about your expectations. Assess your potential, and don't be intimidated by other more experienced racers. There's no shame in being a B-Main driver or a Z-Main driver. The idea is to compete against drivers of equal skill. Be confident about your ability. The "psych" game kills many racers before they ever start the race. No matter what happens, have fun with it! I hope to see you in Albuquerque in September. Good luck and good racing!

READERS' RIDES

"Readers' Rides" is our way of recognizing the unique, innovative—and sometimes bizarre!—vehicles that our readers have created. Send us a sharp, uncluttered, well-exposed color photo of your car or truck (no Polaroids, please!), along with a brief description, to Readers' Rides, R/C Car Action, 251 Danbury Rd., Wilton, CT 06897. If the Ayatollah chooses your photo, you'll receive a one-year subscription to Car Action, or an extension of your existing subscription. You'll also be eligible for the fourth annual "Reader's Ride of the Year Contest" in the fall of 1993. Write your address and phone number on your letter and on the back of each photo you send, in case we need to contact you.



GONZO FOR GAS!

Mike Grotting, who lives in Kent, WA, is crazy for 1/8-scale, nitro-powered cars, especially his OFNA Pirate! When Mike felt the need for nitro speed, he outfitted it with a fire-breathing Nova Rossi 2000 Red Head engine. For

perfect control of his powerful Pirate, Mike uses an Airtronics Caliber FM radio and a 94738 heavy-duty servo. The cool tiger stripe and "splash" paint job was done by Mike's sister, the family artist.

JONESIN' WITH DAVY

Paul Hildreth of Ithaca, NY, owns the Bud Light Jaguar that's in the hands of Davy Jones, driver of the full-scale Bud Light race car. Paul's car is an Associated 10L with Novak radio gear and an Airtronics radio. To paint all the logos on the car, Paul hand-cut masks out of contact paper and then airbrushed the colors on. The photo was taken at Watkins Glen International Raceway in upstate New York.





SPEEDY GONZALEZ

Bernardo Egido Gonzalez of Santa Cruz de Tenerife, Canary Islands, sent us this photo of his Losi Pro SE. Bernardo equipped his race machine with a Futaba radio, a Novak 410-M5 ESC, a Reedy Mr. A motor and Trinity 2.2-inch rims with Triad tires. The body was painted using an airbrush—but with a tire as a compressor! Well, Bernardo must have done something right; he's in fourth place in a Canary Islands points series, and he's moving up!



AMERICAN CLASSICS

These two examples of American Iron come from Thorsten Adams of Göttingen, Germany. Both cars are Optima Mid Custom Specials, but they've had Lazer ZX-R suspensions and steering assemblies installed. The Willys is outfitted with a Futaba 112B ESC and an LRP Pink E motor, and the Cobra

(which belongs to Thorsten's brother, Henning) is equipped with a Futaba 116 ESC and a Tony Neisinger motor. Both Thorsten and Henning are members of Buggy Team Göttingen. They usually race their cars on their club's off-road track, but when the weather is wet (in the winter), they drive on a parking lot.



WITH A LITTLE HELP FROM HIS FRIENDS

Jeff Magno of Akron, OH, sent in this picture of his RC10 Team Car. He equipped it with an RPM "Worlds" front end, a Novak 410-M5 ESC, a Chris Doseck modified motor, RPM belleranks and many other mods. Jeff's friends helped him lay down the smokin' paint job. I wish *my* friends were that talented!

BRICKYARD BLASTER

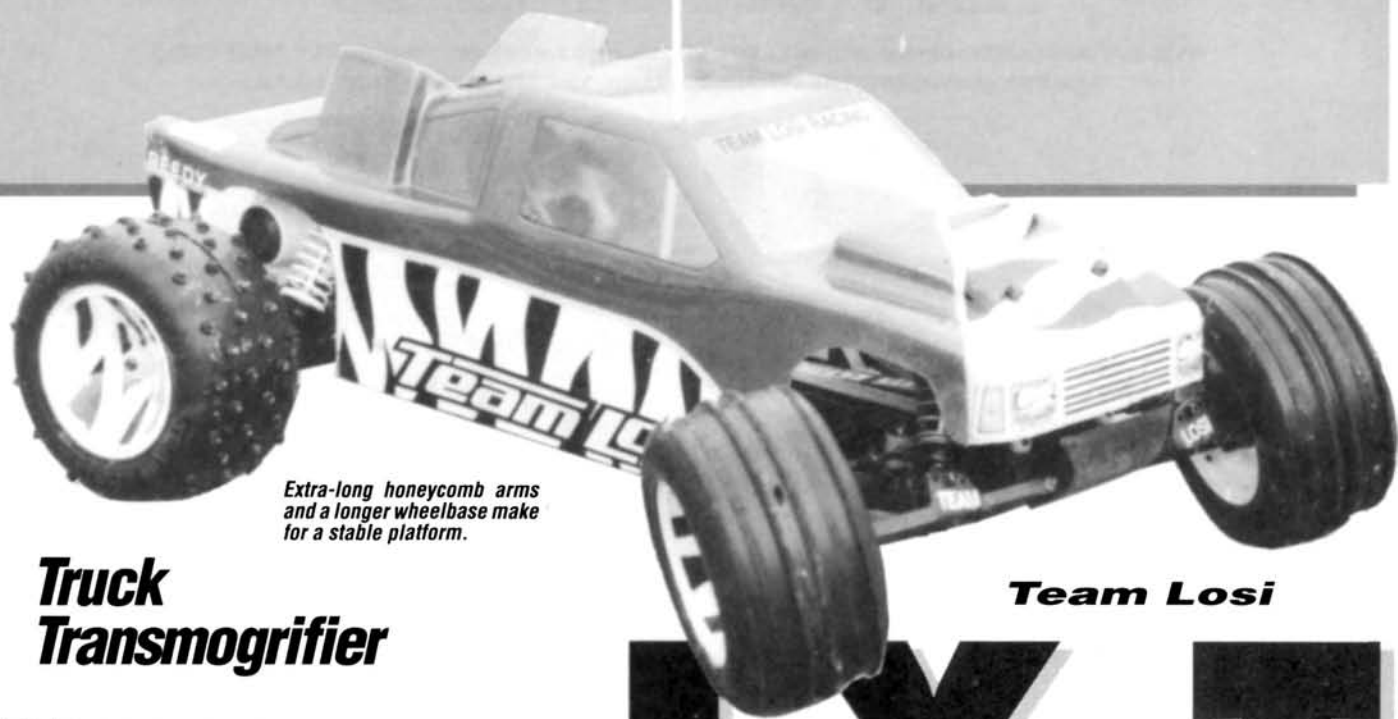
Scott Bettisch of Downs, IL, must have heard those rumors that NASCAR might stage a race at the legendary Indianapolis Motor Speedway; that must be why he decided to paint a special body to mark the occasion. Under the Andy's Oldsmobile body rests a 10L SS chassis with a Novak 410-M5 ESC and NERC-2 receiver.

Control is from an Airtronics XL2P and a Futaba 132 servo.



CLASSIC CRUISER

David Schleinkofer's JR-X2 was just lying around the house collecting dust until he came up with the idea to convert it into a custom street rod. David, who lives in Morrisville, PA, started by turning the tranny and motor around and adding a Speedworks 350 motor and a Futaba radio. To finish the project, David painted and mounted a Parma 1956 Chevy body and a set of aluminum rims.



Extra-long honeycomb arms and a longer wheelbase make for a stable platform.

Truck Transmogrifier

MONSTER TRUCK racers are the toughest drivers to impress. At any racetrack, you'd be hard-pressed to find a truck run in stock configuration; it's because of that natural urge to go faster than the next guy. To keep up, we all experiment and try everything possible. For a while, at a track out here in Southern California, there were even guys who used toothpaste as diff lube.

Team Losi

LX-T CONVERSION

by RODNEY PROUTY

Enter the new LX-T conversion. Team Losi has done all the R&D, tuning and experimenting for you. Simply put, it's the most complete hop-up kit available for any Losi truck or car. Because I'm

a tough-to-impress monster-truck racer, I decided to put it to the test.

DUSTING OFF THE COBWEBS!

My Junior Two had been on a shelf

for some time, so I pulled it out, dusted off the cobwebs and headed for the kitchen table.

This conversion kit includes parts to modify every component of your Losi: new, offset rims, shock towers, a JRX-Pro SE narrow chassis, lightweight front and rear suspension arms, heavy-duty tie-rod ends, longer tie rods, new front caster blocks and front axle carriers, a set of four Hard Body (hard-anodized) shocks with Teflon pistons, a body mount, a body, a complete set of red springs and extra-long slider shafts. And I haven't even mentioned all the miscellaneous hardware; in all, there are 160 pieces. Wow!

GETTING IT TOGETHER

You'll notice that there isn't a set of instructions for the conversion, but there's an LX-T owners'

manual that has very clear line drawings, and a special assembly page that offers tips. When you begin the assembly, refer to the manual and start with the front suspension.

The new, longer steering blocks increase the steering torque. The extra-long, honeycomb arms, which are attached to the new caster blocks, are so long that the rims have been offset to keep the truck within legal width. The new shock towers can be bolted to your old bulkheads.

Cut off the small shock spacer that's molded to each of the rear arms, and install them between the rear shock bottoms and the rear arms so that the shocks clear the tie rods. This wasn't mentioned in the directions, but a quick call to Jack Johnson confirmed it.

In steps 28 and 40, you're in-



The new, extra-long sliders have beefier U-joint outdrives. Note the new H-arms.

LX-T CONVERSION

THE SLIPPER CLUTCH ENGAGED AND THE TRUCK SHOT PAST ME SO QUICKLY THAT I WAS ALMOST BLOWN OFF THE DRIVERS' STAND. THE SPEED WAS INCREDIBLE.



New, taller axle carriers and caster blocks improve steering; the offset rims reduce tire scrub.

structed to install the male sliders next to the gearbox and the female sliders on the rear axles. You might want install the female sliders next to the gearbox, where they're less likely to become clogged with dirt.

Team Losi suggests that you add its friction-slipper kit (no. A-3110) to the transmission to protect the drive-train, extend the transmission's life and improve performance. When I added the slipper, I ran into some problems. On the right gearbox half, I had to carefully file the top shaft hole so that the slipper backplate would pass through the case and rest on the support bearing.

The entire assembly—from disassembling the Junior Two buggy to completing the LX-T conversion—took about three hours. The slipper system itself took 40 min-

utes because of the problems that I had with the gearbox.

AUTOMATION

When I chose the electronics, I started with Novak's* 410-M5 high-frequency Megafet ESC. Novak bills it as a sport model, but with its low "on" resistance, battery-regeneration circuitry and Solder Pop Fuse, it's no wonder that some of the best drivers choose the M5.

On the power end of the M5 is a 17-turn quad Reedy* Mr. R. that has been most effective in my other trucks. I also use a Team Orion* 1400mAh SCR 7-cell pack. Most of my Orion packs have low numbers, but they seem to have more punch than some of the higher-numbered packs that I've used.

To finish the electrics, I installed an Airtronics* VT2P with a standard 94102 servo, and I just couldn't resist throwing in a Novak NER-2X mini-receiver. I like its size, and it uses less current than most receivers.

AHHHHH, GRASSHOPPER!

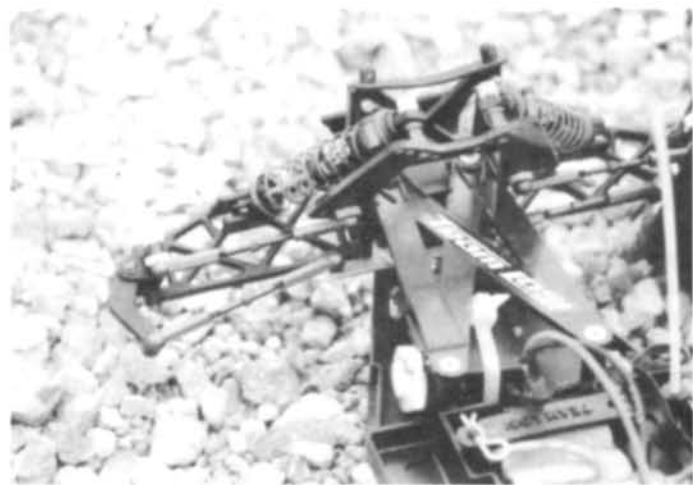
It was time to test the truck's mettle. Right out of the box, it hung on to the corners like glue, but this was just a warm-up.

After about two laps at a slow pace, I decided to let the truck show off. When it entered the straightaway, I unleashed the beast. Help! The slipper clutch engaged, and the truck shot past me so quickly that I was almost blown off the drivers' stand. The speed was incredible. I don't know if it was the Losi LRM transmission or the Reedy motor;

Ahhhh, Master, I could see the wisdom. The truck ran as if it was on rails! With incredible straightaway speeds and the cornering of a 1/12-scale on-road car, this truck was ready to fight.

Everyone asks if I've noticed a difference between this truck and the old truck. Yes! There's a big difference.

Thanks to Team Losi for not forgetting the little guys, and for making it possible for us to upgrade our old equipment with the latest technology at a reasonable price; and to Jack Johnson and Brian Peterson for the set-up tips. Till next time, from California—later, dudes!



New shock-tower angles improve cornering.

BIG BOYS' SETUPS

Jack Johnson

Springs—Reds in front (or pinks for more steering); reds in the rear.

Shock oil—30WT silicone oil front and rear.

Ride height—Rear drive shafts and front A-arms level with the ground.

Static adjustments—1 degree toe-in; 2 degrees camber front and rear.

Brian Peterson

Springs—Reds in front, pinks in the rear.

Shock oil—30WT oil in the front, 35WT oil in the rear.

Ride height—Rear drive shafts and front A-arms level with the ground.

Static adjustments—No toe-in or toe-out on front wheels. Zero degrees camber with suspension fully extended.

whatever it was, the acceleration was blistering.

When the truck was up to speed, I noticed a little push on the front end. Then, like something from the old Kung Fu TV show, I heard a voice. "Grasshopper, you must run pink springs in the front." It was the wise one, Jack Johnson, speaking. Quickly, I pulled the truck into the pits, changed the springs, popped in a fresh 7-cell pack from Trinity* and ran back to the track.

*Here are the addresses of the companies mentioned in this article:

Team Losi, 13848 Magnolia Ave., Chino, CA 91710.

Novak Electronics Inc., 128-C.E. Dyer Rd., Santa Ana, CA 92707.

Reedy, distributed by Associated Electrics Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626.

Team Orion, distributed by Peak Performance, 1362 E. Edinger, Bldg. B, Santa Ana, CA 92705.

Airtronics Inc., 11 Autry, Irvine, CA 92718.

Trinity Products Inc., 1901 Linden Ave. #8, Linden, NJ 07036. ■

TROUBLESHOOTING

by FRANK MASI

YOKOMOTION COMMOTION

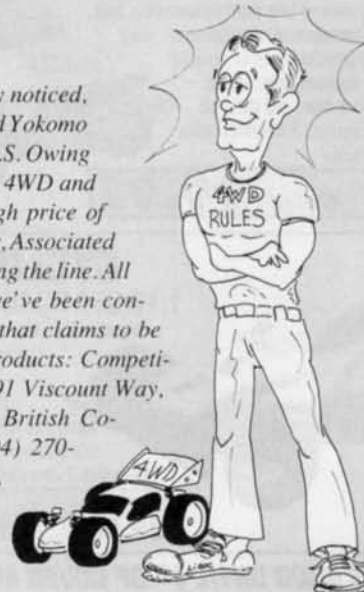
I have a YZ-10. I keep breaking parts, so I'm always trying to upgrade them. My front end is a Duraluminum piece with a lifetime guarantee. My big question is: can I use the front A-arms from the Works '91 car on this bulkhead? I also saw a drive spur gear that was separate from the rear belt-drive gear. Who makes it and where can I get one? Finally, are the Works '91 A-arms longer than the stock swing shafts? Keep on writin' cause I'll be readin'.

Robben P. Kadish, Ft. Campbell, KY

The A-arms from the Yokomo Works '91 should fit the YZ-10's front bulkhead without any modification. I think that the Works car's front bulkhead has slightly more front arm rake than the YZ-10's does, but the mounting tabs are the same size. The Works arms are longer than those on the YZ-10, so you have to buy longer front drive shafts (no. ZC-422A) to use them. The part number for the Works '91 front arms is ZC-407A, and the set includes a pair of rear arms as well. To go with the arms, you'll also need the Works car's front hubs and carriers (no. ZC-432, or ZC-432D for Yokomo's "Duralmine" hubs; no. ZC-413A

for the hub carriers).

As you've probably noticed, it's kind of hard to find Yokomo kits and parts in the U.S. Owing to a lack of interest in 4WD and the comparatively high price of the new Works '91 car, Associated has stopped distributing the line. All isn't lost, however; we've been contacted by a company that claims to be importing Yokomo products: Competition R/C Imports, 2691 Viscount Way, Unit 101, Richmond, British Columbia, Canada; (604) 270-9060. (On a side note, I've just learned about Yokomo's newest 4WD car—the Works '93. It's based on the prototype cars used by team drivers at the '91 IFMAR Worlds. Stay tuned.)



BECOMING UNWOUND

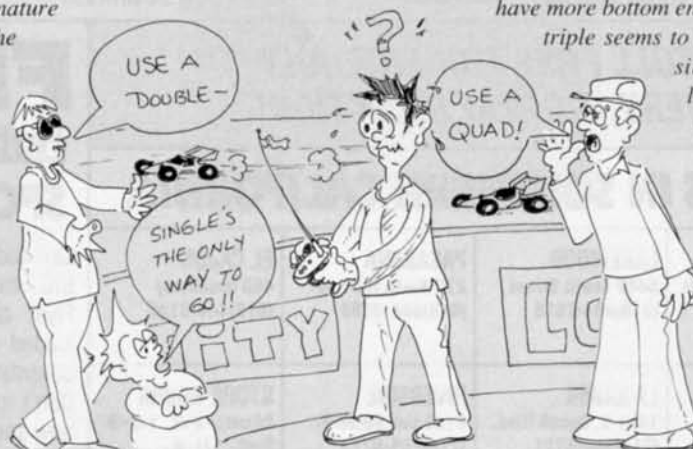
I've been involved with R/C cars for a few years now, and I've been contemplating the same annoying question for quite a while: what's the difference between single-, double-, triple-, quadruple-, and quintuple-wind motors? For example, the Mr. Series from Reedy Modifieds has a 13-turn double, a 13-turn triple and a 13-turn quadruple. I have a few ideas about the difference, but I'm not sure if they're correct.

Iain Cook, Alpena, MI

Basically, the number of turns refers to the number of times the wire on a motor's armature pole is wrapped around the armature pole. The length of this wire determines the motor's resistance to applied voltage. Motors with fewer turns will yield more rpm than those with more turns. So how is a 13-turn single different from a 13-turn triple? Although the number of times the wire is wrapped around the armature pole (13 times, in this ex-

ample) is the same, the number of strands that make up the winding can vary. A single-wind motor has one strand of heavy-gauge wire wrapped 13 times; a triple-wind motor has three strands of smaller-gauge wire, and each strand is wrapped around the armature pole 13 times. The three strands of smaller wire are approximately as thick as the single larger strand, but because the three smaller strands have more actual surface area through which the voltage can pass, resistance is slightly less. This difference in resistance is the reason that a single-wind motor seems to have more bottom end than a triple, but the triple seems to have more top end. A

single-wind is usually lighter than a multiple-wind motor, and it spins a little more quickly initially. A multiple-wind motor will "spool up" more slowly, but its higher rotating mass can increase the flywheel effect to help it maintain higher rpm.



ILLUSTRATIONS BY GERRY YARRISH



HE WANTS IT ALL!

I need your help! I want to buy modified motors for my USA-1 electric, but I have no idea what to look for. I'd like my truck to have wicked speed and loads of torque. I use a Tekin 610-R and Progressive 4400mAh batteries. I don't want a motor that will run so hot that I'll have to cool it down every 10 minutes.

Tyrone Pohl, Osoyoos, British Columbia, Canada

To quote Mick Jagger, "You can't always get what you want." The key here is compromise. You can have lots of top speed, or you can have lots of torque; you just can't have them at the same time. After all, you don't see Bigfoot running low 11s in the quartermile, and you don't see Kenny Bernstein's Budweiser King Funny Car at local truck pulls. Besides, what if someday you decide to climb that big embankment in your yard instead of shooting up and down the street racing joggers? You'd be sorry you spent all your money on those 10-turn, 50,000rpm motors, now wouldn't you? Most people who own dual-motor, large-tire monster trucks use motors in the 16- to 20-turn range.

For a truck such as the USA-1, I recommend motors that are specifically designed to run in pairs, such as Trinity's Matched Madness motors, which are 16-turn, single winds, or Speedworks Monter Mash (normal rotation) and Monster Mash 2 (reverse rotation) motors, which are also 16-turn singles.

Owing to the extra capacity of the 4400mAh cells that you use, your motors may be susceptible to overheating. If they become too hot to touch, use gradually smaller pinion gears until the motors' temperature after a full run is acceptable.

CAPACITOR CAPER

I have a Traxxas Hawk with a Futaba MC112B ESC. I was going to get a 14-turn tri-rotor motor. Will it work well with my ESC? Will I need capacitors? If so, what kind should I use? Is there a way that I can use capacitors without having to solder them?

Ricky Potter, New York, NY

You can use a 14-turn motor with Futaba's 112B, but be careful. First, make sure that you're using a proper gear ratio. Over-gearing will cause the ESC to overheat and either shut down or become damaged. Try to use a lower ratio than you require to ensure that your ESC operates coolly and efficiently.

You should use capacitors whenever you use ESCs. (Mechanical speed controllers don't switch quickly enough to cause much noise, so it isn't essential that you



use capacitors with them. The capacitor you use depends on the switching rate of the ESC itself. Less expensive ESCs switch at around 70Hz; high-frequency ESCs switch at around 2500Hz—quite a difference, but then, they're called "high frequency" because of the frequency of their switching cycles. The Futaba MC 112B is a member of the first group. To suppress motor noise that can cause radio interference, install a 0.1-microfarad 50V ceramic capacitor between each lug (one for positive and one for negative) and the motor's can. To smooth out acceleration at lower speeds, install a 47-microfarad 25V aluminum electrolytic capacitor between the positive and negative lugs. Sorry, Ricky, the only way to install capacitors properly is to solder them in place. If you can't do this yourself, ask for help from someone who can do it.

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TAMIYA



by FRANK MASI

ONE MANUFACTURER has been noticeably absent from the American R/C off-road racing scene recently—Tamiya*. This is curious because Tamiya pioneered this popular class with such ground-breaking buggies as the Sand Scorchers and the Rough Rider.

Tamiya has been busy producing some of the highest-quality entry-level kits in the world, but now the company is trying to re-enter the racing market. The results of this effort are two new 1/10-scale off-road racing cars—the 2WD Super Astute (see the May '92 issue) and the 4WD Top Force.

The Top Force incorporates Tamiya's latest 4WD technology, and it and the Super Astute were the company's contenders at the '91 IFMAR Worlds.

OVER THE TOP

The Top Force is based on Tamiya's entry-level 4WD Manta Ray, and it uses basically the same drive-line configuration, i.e., bevel-gear reduction transmissions mated by a drive shaft that runs lengthwise. Unlike the Manta Ray, which has front and rear bevel-gear differentials, the Top Force has smoothly

operating ball diffs that can be removed easily through the fore and aft access hatches. Up front, power is transferred from the diff to the wheels through universal-joint drive shafts; standard dogbone-type drive shafts are used in the rear.

Unlike the "tub" chassis design that Tamiya uses in many of its cars, the Top Force has fiberglass upper and lower chassis plates. There are cutouts in the lower plate that enable you to mount



saddle-pack-type batteries, but the hardware included in the kit is for stick packs—an unexpected inconvenience. The upper deck is secured to both the front and rear gearboxes, “tying” them together and strengthening the chassis.

The Top Force's suspension has front and rear A-arms identical to those on the Manta Ray. Their two-piece design keeps them light, yet it eliminates the external, struc-

Move it or lose it!

tural bridging (found on many designs) that can trap dirt and debris and add unnecessary weight to the car. Traditional hub carriers are attached to the arms with metal hinge-pins on the bottom and adjustable camber links on top. The

front and rear fiberglass shock towers offer a variety of upper-shock and camber-rod mounting positions. I was disappointed that the camber rods (and all the other tie rods) were standard threaded rods instead of the turnbuckles

you'd expect to see on a car designed for competition. Another disappointment: to curb costs, Tamiya has included plastic shocks instead of metal ones. They'll do the job, but I question their durability over the long haul. I replaced them immediately with Tamiya's medium length aluminum-body shocks.

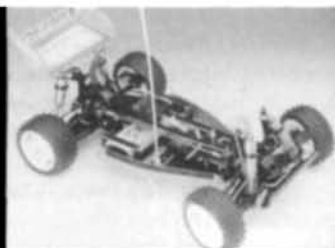
The only ball bearings that come with the kit are for the

Top Force's steering system, which consists of bearing-supported steering arms that pivot on aluminum posts. All of the hardware you'll need to mount the steering servo is included.

Tamiya's attention to detail is evident in many aspects of the kit. The Top Force's unique aerodynamic body really sets it apart. There are two functional cooling ducts (one above the

cockpit area and the other on the car's left side) that you can open with an X-Acto knife or Lexan scissors. A matching undertray and a one-piece bi-level wing are also included.

make do with bronze bushings. I'm all for the use of such materials to keep entry-level cars accessible to beginners, but I was under the impression that this was a racing car. Let the



TAMIYA TOP FORCE

Manufacturer Tamiya
Type 4WD Off-road buggy
Scale 1/10

DIMENSIONS:
Overall Length 15.625 inches
Width 9.75 inches
Wheelbase 10.625 inches
Front Track 8.25 inches
Rear Track 8 inches

WEIGHT:
Gross (with battery) 3 pounds, 10.3 ounces

BODY:
Type Single-seat buggy with undertray
Material Polycarbonate

CHASSIS:
Type Plate with upper stiffener
Material Fiberglass

DRIVE TRAIN:
Primary Pinion/spur
Transmission Bevel-gear
Differentials Ball
Bearings/Bushings Bronze Oilite bushings

SUSPENSION:
Type (f/r) A-arm with upper link
Damping (f/r) Oil-filled, coil-over shocks

WHEELS:
Front: Type One-piece, plastic
Dimensions (DxW) 2.2x1 inches
Rear: Type One-piece, plastic
Dimensions (DxW) 2.2x1.5 inches

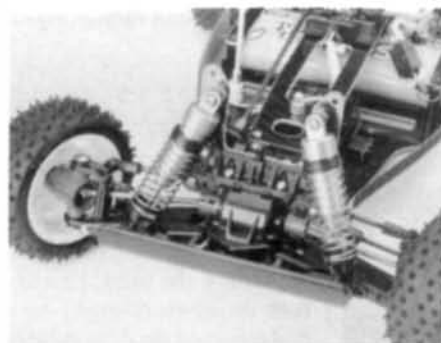
TIRES:
Front/Rear Tamiya Super Gripper medium spike

ELECTRICS:
Motor RS 540
Battery 6-cell, sub-C Ni-Cds*
Speed Controller Tekin TSC-411P*

OPTIONS AS TESTED:
Futaba 2PBKA Magnum Junior radio; Futaba S132H ball-bearing servo; Tekin TSC-411P electronic speed controller; Speedworks Sport Pak 7.2V battery pack; Trinity Ground Zero outlaw stock motor.

COMMENTS:
The Top Force is a solid contender that features ball diffs and a long suspension throw, but plastic shocks and bronze bushings are drawbacks. Tamiya can't seem to make up its mind about who the Top Force is for—racers or hobbyists. The Top Force is a respectable race car that's capable of decent performance, and it (and the 2WD Super Astute) signals a new direction for Tamiya.

*not included



The Top Force has a long-travel front suspension with unique, two-piece A-arms that are rigid yet light. Front and rear fiberglass shock towers offer several mounting positions for the shocks and the adjustable camber rods.

The beautiful paint work on the test car was done by the master himself, Richard Muise of Motion Graphics*.

ASSEMBLY

Aside from the shocks and the tires (which you can assemble at any time), I recommend that you stick to the assembly sequence shown in the instructions. Build the ball diffs first; if you've never assembled a

Tamiya ball diff, pay close attention to the diagram. Tamiya has thoughtfully provided a few

beginners have the Manta Ray! I replaced all of the bushings with Tamiya's sealed ball bearings. Beside their obvious performance advantage, bearings greatly increase the car's reliability and its running times.

Once you've placed the diffs in the gearboxes, take care not to tilt the assemblies, or the diff outdrives will fall out; they're only secured by the drive shafts after the assembly has been completed.

If you use the stock bushings, be sure to use the included bush-

**"THE FORCE
ACCELERATED
SMOOTHLY
DOWN THE
MAIN
STRAIGHT INTO
THE LEFT-
HAND
SWEEPER,
WHICH IT
HANDLED WITH
AUTHORITY—
IF NOT
AGGRESSION."**

The front-end design has independent A-arms with upper camber links; oil-filled, coil-over shocks; and universal-joint drive shafts. A ball-bearing-supported steering system keeps the Top Force in the "groove."



extra parts, such as diff balls and small washers, in case you lose one.

I'm not sure who Tamiya is targeting with this model. The steering arms have ball bearings, but the rest of the car must

ing grease wherever the instructions indicate. This will help to keep friction from slowing the car down.

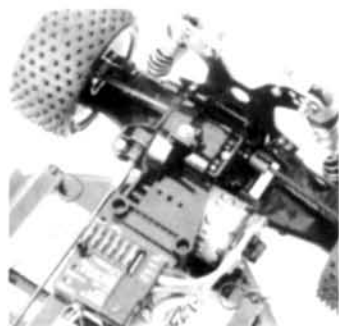
Also, it's good to glue the tires to the rims with CA before you mount them on the car. This

TOP FORCE

will prevent them from coming off when the car accelerates or takes hard corners.

RUNNING GEAR

There's plenty of space for the radio gear on the Top Force's chassis, so it isn't necessary to invest in the latest, state-of-the-



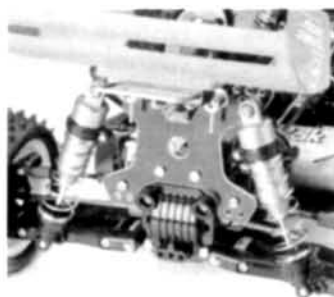
Power from the motor is transferred to the front and rear ball diffs by way of a bevel-gear drive system and a center drive shaft that runs lengthwise. Standard dogbones are used in the rear.

art micro receiver or speed controller—any size will fit. I use my trusty Futaba* 2PBKA Magnum Junior radio system. The stock R102JE receiver and S132 high-speed servo fit on the chassis perfectly. Power is provided by a Speedworks* Sport Pak 7.2V stick battery, and its voltage passes through a Tekin* 411P ESC to a Trinity*

Ground Zero 15-turn outlaw stock motor. This motor is called "outlaw" because it has a stock motor can and endbell (with bushings) and a machine-wound 15-turn armature—legal for modified-class racing, but not for stock.

TOP FORCE TRACK TEST

The first drive is always rewarding because all your hours of hard work finally pay off! Transmitter in one hand, Top Force in the other, I walked to the side of the track, turned on both switches, dropped the car and mounted the drivers' stand. Punching the throttle didn't produce the blistering acceleration that I associate with 4WD cars, so I pulled in and did a drive-line analysis. Sure enough, I hadn't tightened the rear diff sufficiently when I assembled it. To fix it, I just loosened the four access hatch screws to remove the hatch, took out the diff, tightened it and reinstalled it. That was the ticket! The Force accelerated smoothly down the main straight into the left-hand sweeper, which it handled with authority—if not aggression. The Top Force took off—with its nose high—over the 18-inch-high, table-top main jump, but



Tamiya's attention to detail makes the Top Force very easy to maintain. The rear hatch is secured by only four screws, allowing fast access to the rear diff.

it landed hard enough to cause the suspension to bottom out. I didn't think that heavier shock oil was the solution; the Force's suspension had worked very well on the track's bumpy, hard-packed surface. Rather, the shocks were to blame. They use a volume-compensating rubber diaphragm to make room for the oil that's displaced when the shock is compressed. In addition, a small hole is drilled in the shock's cap to permit air to move freely from behind the diaphragm. In essence, it's difficult to add "rebound" or progressive damping to prevent the shocks from "bottoming" easily. I plugged the vent holes with thick CA, and this seemed

to help the situation somewhat.

The Top Force tended to understeer (push) a little when entering very tight turns, but it quickly came back in line whenever I applied throttle.

CONCLUSION

The Top Force proves that, as far as racing hardware goes, Tamiya is heading in the right direction. Although the Top Force is touted as a racing car, it comes with bushings instead of bearings and plastic shocks instead of metal ones. These "sins" are easily forgiven, but the facts remain: make entry-level cars for beginners; make racing cars for those who want them.

All in all, the Top Force is an excellent performer. It's easy to build and easy to maintain. In the market for a 4WD car? I recommend that you give Tamiya's latest more than a quick glance!

**Here are the address of the companies mentioned in this article:*

MRC/Tamiya, 200 Carter Dr., Edison, NJ 08817.

Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718.

Speedworks: distributed by Trinity Products Inc., 1901 Linden Ave. #8, Linden, NJ 07036.

Tekin Electronics, 970 Calle Negocio, San Clemente, CA 92672.

Trinity Products Inc., see above. ■

TAMIYA: A BRIEF HISTORY



The release of the Top Force marks a significant occasion—Tamiya's hundredth R/C car. Although just about everyone involved in R/C has owned a Tamiya car, in the U.S., we know very little about the company. In addition to R/C cars and trucks, Tamiya is also one of the largest producers of static models, and it has distribution offices worldwide.

Tamiya's roots can be traced back to 1946, when Yoshio Tamiya founded a sawmill/lumber factory in Shizuoka, Japan, and called it Tamiya Shoji & Co. In 1948, a wooden model division was formed; it became the company's mainstay in 1953, when the sawmill closed. Tamiya Shoji & Co. continued to produce primarily wooden models (ships were especially popular) until 1960, when it began to offer plastic models that revolutionized the Japanese model industry.

In 1976, Tamiya unveiled its 1/12-scale Porsche 934 Turbo (above) and preserved its place in history as an R/C car innovator. There were R/C cars prior to Tamiya's, but none had ever been produced on such a large scale—and with such an impact.

Today, Tamiya consists of four companies: Tamiya Shoji & Co., Tamiya Plastic Model Co., Tamiya Plastic Co. Ltd. and Tamiya Inc. Tamiya's founder died in 1988.

Shunsaku Tamiya (Yoshio's son, pictured left) is the president of Tamiya, and Masayuki Tamiya is the president of the newly formed Tamiya America Inc., which will officially begin to operate in July.



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LETTERS

(Continued from page 9)

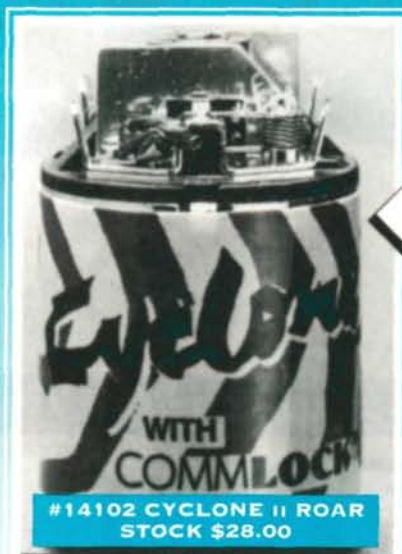
I don't think that the YZ-10 is still being imported. Yokomo is now producing a car called the Works '91, which is a refined YZ-10. Frank Masi reviewed the Works '91 in the March '92 issue of Car Action. As to where to find one, the latest word is that Competition R/C Imports of Canada is now importing the Yokomo line of cars and parts. The address is 2691 Viscount Way, Unit 101, Richmond, B.C., Canada V6V 1M9; phone: (604) 270-9060. If you have your heart set on getting a YZ-10, you could call different hobby shops; one of them might still have a kit in stock. As for your question about shocks, the ones on the YZ-10 weren't very good, while the shocks on the new Works '91 are competition worthy. AS

CONFUSED CASTER

In your article in the July '92 issue on race-truck tuning, it states that negative caster occurs when the axis the steering block pivots on leans backwards. Actually, this would be positive caster. Positive caster increases high-speed and straight-line stability, where negative caster produces quicker steering response (check out

(Continued on page 78)

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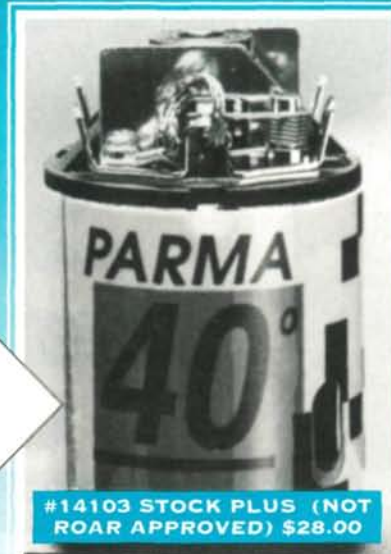
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HOME-BUILT PROJECT

THE FIRST THING most people ask when they see this 1/10-scale Top Fuel dragster is, "Does that thing really run?" It may look like a static model, but it's a fully operational R/C car that has run a scale quarter-mile in a little more than 4 seconds at about 35mph. With full-size dragsters hitting the 300mph mark, that's pretty close to scale!

The idea behind this car was to build a super-realistic R/C dragster within the super-skinny confines of a scale dragster chassis. So, starting with about 6 feet of 1/8-inch-diameter K&S' brass tube, I soldered a 25-inch wheelbase chassis with integral tall-wing struts and a roll cage. I soon saw that a

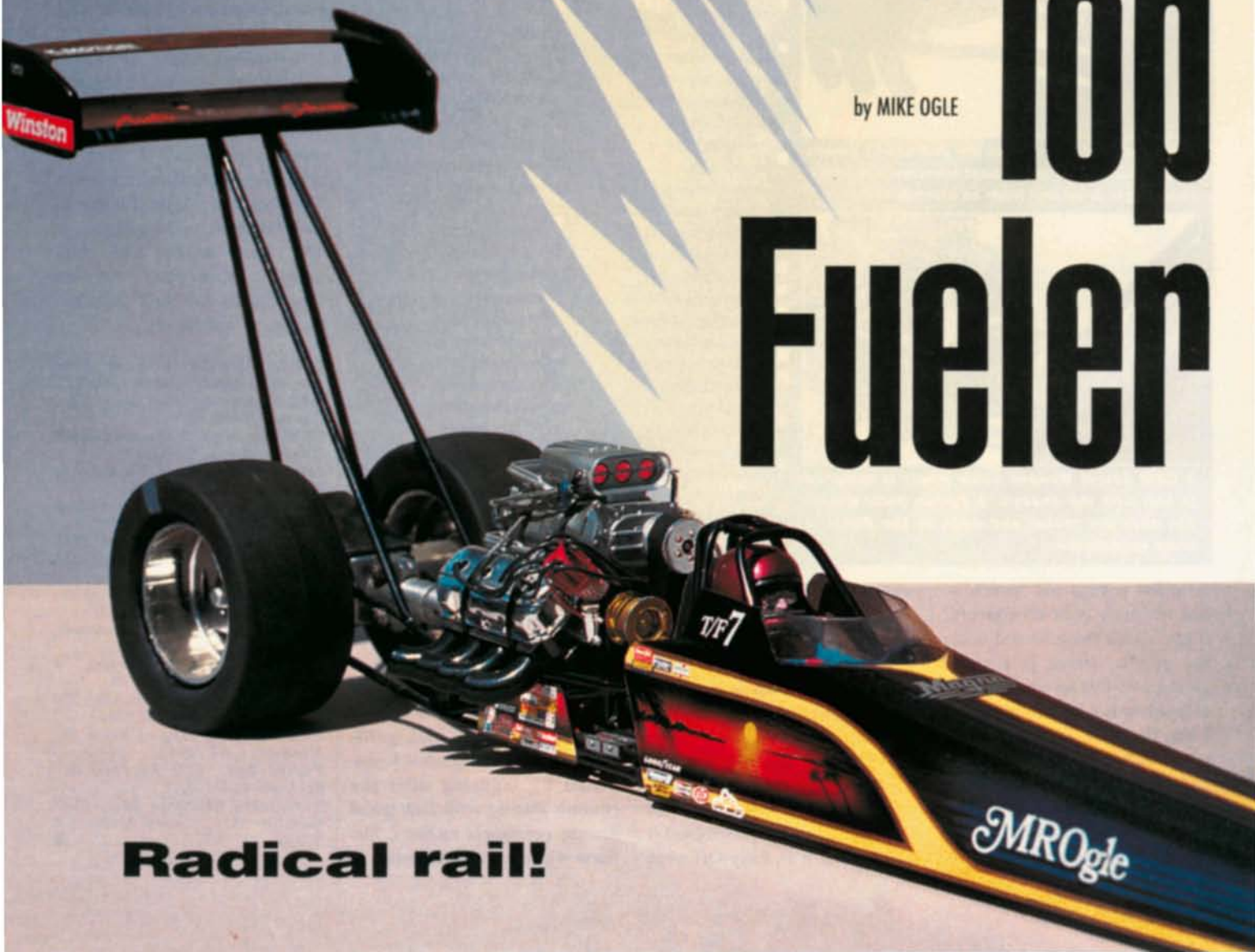
transverse-mounted motor would increase the car's width and detract from its scale appearance, so I mounted the CKW' Secret Weapon stock motor in line with the chassis. I bolted a Leisure Electronics' boat transmission onto the motor, and that reduced the final drive ratio to 3:1. I then coupled this assembly to a 1:1-gear, right-angle drive unit (the type used by carpenters on electric drills) that I had found in a local hardware store. I equipped two good-looking chrome wheels with TMS Racing Products' rubber, semi-pneumatic slicks and bolted them to a hardened aluminum True Turn' axle to complete the drive train.



PHOTOS BY MIKE OGLE

by MIKE OGLE

Top Fueler



Radical rail!

MROgle

TOP FUELER

On the front end, I made a small graphite axle plate to hold the Parma* kingpins and Delta* front axles. Two solid-rubber 1-inch-diameter airplane tail wheels from a local hobby shop made very scale-looking front dragster wheels. Piano-wire tie rods connect a Futaba* S-133 microservo to the steering arms. The steering duties are minimal—never much more than a few degrees in either direction.

Space was already tight, so I decided to power this project with 600mAh SCR Sanyo* batteries. These cells have found a home in R/C drag racing because they're small and light, yet they



On the day of the photo session, my friend Eric's new Kyosho 4-Runner served as the dragster's "tow" vehicle. It's one of the most realistic-looking trucks I've ever seen, and it makes a good "prop."

finish by Maybelline—yep, nail polish!)

The Parma Hemi kit provided a lot of inspiration for this project, and it's the part of the car to

cleaner. It takes the plating right off, and it doesn't damage the plastic. I reassembled the blower and finished it with Testor's flat aluminum Military Scale Model

M A T E R I A L S

- 1/8-inch-diameter K&S brass tube
- CKW Secret Weapon stock motor
- Leisure Electronics boat transmission
- 1:1 geared right-angle drive unit
- chrome wheels
- TMS Racing Products rubber semi-pneumatic slicks
- True Turn hardened-aluminum axle
- Parma kingpins
- Delta axles
- 1-inch-diameter airplane tail wheels (2)
- piano-wire tie rods
- Futaba S-133 microservo
- 600mAh SCR Sanyo batteries
- Futaba MC-110 speed controller
- Parma Hemi engine kit
- Dremel tool
- Easy-Off oven cleaner
- Testors flat aluminum Military Scale Model paint
- silver duct tape
- 1/8-inch-wide hair ribbons
- red, blue and yellow Sharpie markers
- Parma Hemi engine wiring kit
- 1/16-inch coaxial cable
- Fine Design Streamliner dragster body
- Pactra paints
- Letraset rub-on lettering
- clear packing tape
- X-Acto knife
- 1/24-scale slot-car decals
- Associated off-road wing



The motor is connected to the gearbox by means of a Leisure Electronics boat transmission and a right-angle drive unit from an electric drill.



A CKW Secret Weapon stock motor is mounted in line with the chassis. A Parma Hemi engine fits over the motor and adds to the Fueler's scale appearance.

have full voltage and "punch"—and run time is of no concern! Right behind the cells and under the plastic driver is a small Futaba MC-110 speed controller. (My driver is a "Frankenstein" of sorts. He has a Tamiya F-1 driver's head, a GI Joe's shoulders and arms, reflective sunglasses cut out of chromed sheet plastic, nylon seat belts, and a helmet with a high-gloss candy cranberry

which I added the most detail. After I had assembled the basic motor block, I used a Dremel tool to remove the bottom two-thirds of the block just below the cylinder heads, so that I could mount it right over the motor. The blower, valve covers and bug-catcher scoop came chrome-plated, but I wanted an "aluminum look" for the blower, so I disassembled it and soaked it in Easy-Off oven

paint. I made the blower explosion blanket (mandatory on full-size supercharged fuel cars) of silver duct tape and the restraining straps of 1/8-inch-wide hair ribbons. The motor has several small red-, blue- and gold-anodized-look fittings that I simulated by coloring over the chrome plating with fine-point Sharpie permanent markers. The Hemi wiring kit supplied some of

the ignition and fuel-line wiring, and I added other braided fuel lines (made of 1/16-inch coaxial cable from which I had removed the insulation).

I trimmed the rear half and the enclosed canopy of the Fine Design* Streamliner dragster body, and I narrowed the molded-in front spoiler by 1/4 inch so that it would fit between the small front wheels. I completed the paint job, which has a mural on each side, with Pactra* candy blue, candy purple, yellow, gold and black. I used Letraset rub-on lettering from an art-supply store. It's available in hundreds of styles and several colors. To protect the lettering, cover it with 2-inch-wide clear packing tape, and trim the tape to size with a sharp X-Acto knife. The "sponsor" decals are from a 1/24-scale slot-car decal sheet; I think that they look a lot more realistic than the grossly oversize stickers on most 1/10-scale sheets. To top it all off, I attached a cut-down Associated* off-road wing and added a bi-level upper element.

Any project such as this is a work-in-progress. I plan to update it to keep up with full-size Top Fuel cars. Maybe I'll extend its wheelbase to 30 inches...or add dual mags and fuel pumps...or, maybe, little side winglets. As full-scale dragsters evolve, so will this one!

**Here are the addresses of the companies mentioned in this article:*
K&S Engineering, 6917 W. 59th St., Chicago, IL 60638.

CKW Mfg., 1889 W. Commonwealth Unit 1, Fullerton, CA 92633.

Leisure Electronics, 22971 B Triton Way, Laguna Hills, CA 92653.

TMS Racing Products, 1840 220th St., Ste. 360, Torrance, CA 90501.

True Turn Racing Products, 3333 Harrison Ave. #5, Riverside, CA 92503.

Parma Int'l. Inc., 13927 Progress Pky., North Royalton, OH 44133.

Delta Mfg., 27 Racecar Ct., Lorimar, IA 50149.

Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718.

Sanyo Electric, Battery Division, 200 Riser Rd., Little Ferry, NJ 07643.

Fine Design & Mfg., 2 North St., Middletown, NY 10940.

Pactra Inc., 620 Buckbee St., Rockford, IL 61104.

Associated Electrics Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626.



F i r e p o



b y S T E V E P O N D

I'M FORTUNATE enough to have driven almost every type of R/C car available. I don't think there's a class that I *don't* like, but I do have some personal favorites, and off-road racing ranks at the top of my list. Flat-track racers will always have a place in my R/C garage, but the added dimension of occasional

flight and the forever changing track conditions that off-road racing can offer are irresistible.

At the pinnacle of this class are the $1/8$ -scale buggies. Electric buggies are by far the most popular, and I enjoy them tremendously, but nothing broadens the smile on my face like a nitro-burning off-road buggy.

Kyosho* has championed the promotion of $1/8$ -scale off-road racing in the U.S. Its line of $1/8$ -scale buggies started with the Integra and Turbo Burns cars. The Burns design more closely resembled $1/10$ -scale electric cars in that it featured a plate chassis, and its shaft-drive system was much more reliable than older

BURNS REVEALS THE NEW KYOSHO

w e r !

chain drives. The Burns cars ushered $1/8$ -scale buggies into the limelight by combining the mind-blowing power of nitro-burning engines with the suspension dynamics of $1/10$ -scale buggies. Not only did they have the power, but they could handle it, too. The Burns cars were tremendous performers, but, like any front-running manufac-

turer, Kyosho is always looking for ways to make something good even better.

The latest of the "Burns-generation" cars is the Kyosho Inferno. At a glance, even someone very familiar with the Turbo Burns might mistake it for one with a different body and rims. The Inferno, however, incorporates a number of

new features that are discreetly tucked under the hood and boost the car's performance on and off the track.

The first of these is a set of new bulkheads that's designed to take the pain out of the rigorous maintenance that $1/8$ -scale off-road cars require. With this design, you can have access to the differentials



PHOTOS BY STEVE POND

in a minute or two by removing six screws and two E-clips.

Older, metal, sealed bearings had microscopic gaps around their perimeters that allowed debris to enter and foul them. The Inferno includes new, rubber-sealed ball bearings that are virtually maintenance-free.

The main chassis plate remains virtually unchanged, but the positions of the other components have been shuffled. The new design includes a radio tray that displaces both servos and the fuel tank. The steering servo is near its original location on the front right side of the chassis, but the throttle servo is adjacent to the center differential. (This makes linkage installation and adjustment a breeze.) The fuel tank is mounted on the front left side of the car.

A dual-brake system allows the Inferno to stop much more quickly than the Burns. The single-brake system worked well as long as the center differential was tight; if it was loose, there was only rear-wheel braking. The new braking isn't affected



Kyosho's Inferno was designed to make fueling and maintenance easier.

by the setting of the center diff, and the four-wheel braking will leave the car standing on its front wheels if that's what you're looking for!

The Inferno includes three supports that you can use to change the rear toe-in angle of the rear suspension. This enables the car to track straighter on slick tracks.

This car also has a new front bumper. It may seem insignificant, but it makes a big difference in performance, most notably because it doesn't protrude as far from the chassis

as those on Kyosho's older models. The design prevents the bumper from digging into the track during a nose-down landing and flipping the car onto its roof.

Other features include: redesigned shock towers; a stronger steering linkage; light, one-piece wheels; and BSW-40 tires, which are very popular in racing circles.

ASSEMBLY

The Inferno's assembly goes smoothly, owing to the exacting tolerances of its parts and the

**"NOT LONG AFTER
I FIRED UP THE
ENGINE, THE
INFERNO DREW A
LARGE, GAPING
CROWD. THEY
HAD NEVER SEEN
ANYTHING LIKE
THIS!"**

S P E C I F I C A T I O N S

Manufacturer Kyosho
Type 4WD gas-powered off-road
Scale 1/8
Price \$679.95

DIMENSIONS:

Overall Length 17.8 inches
Width 12 inches
Wheelbase 12.9 inches
Track (f/r) 10 inches

WEIGHT:

Gross (with fuel) 7 pounds, 6.4 ounces

BODY:

Type Single-seat buggy
Material Polycarbonate

CHASSIS:

Type Plate w/upper radio tray
Material Aluminum alloy

DRIVE TRAIN:

Primary Pinion/spur with centrifugal clutch

Transmission Center bevel diff
Differentials Bevel

Bearings/Bushings Rubber-sealed ball bearings

SUSPENSION:

Type (f/r) Lower A-arm/adjustable upper A-arm

Damping (f/r) Oil-filled, coil-over shocks

WHEELS:

Type (f/r) One-piece plastic
Dimensions (DxW) (f/r) 3.15x1.75 inches

TIRES:

Front/Rear Kyosho BSW40 mini-pin spike

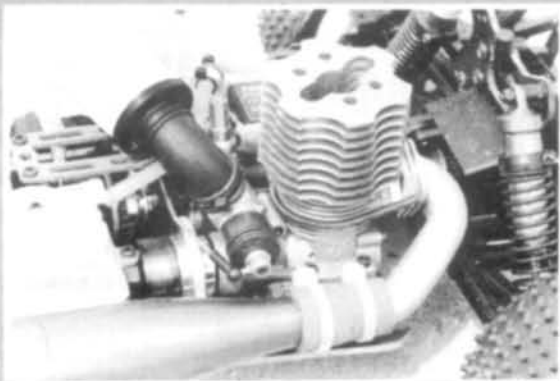
OPTIONS AS TESTED:

O.S. RX-B 3.5cc engine and blue-anodized tuned pipe; Rex 180-degree header; Paris Racing coupler; Futaba PCM 1024 radio; Airtronics 94151 and 94152 servos; Kyosho steel main gear, turn-buckle links and fiber brake disks; Hayes fuel filter; Prather fuel line; Rossi R6 glow plugs; Sanyo 5-cell 600mAh receiver pack; Bich'n Bodies paint job.

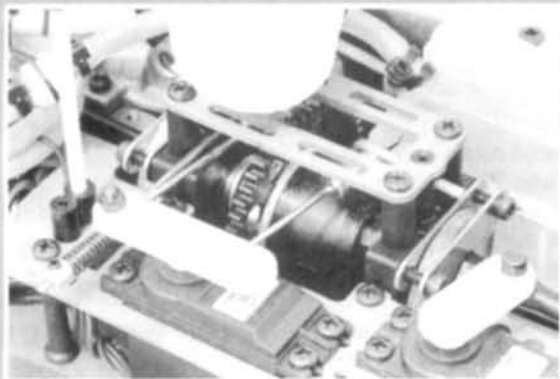
COMMENTS:

Nitro-powered buggies are reputed to be difficult to operate, but once you're familiar with carb adjustment, they're as easy to run as electric-powered cars—but with *much* more power. The Inferno ranks as one of the best, and it has a great support network to back it up. The front suspension arms fit loosely, but this can be rectified with some 4mm washers. The kit was very easy to build and very rugged, and it performed well on the track. Kyosho claims that this car makes hop-ups a thing of the past. Although I made some minor mods, this is—in my opinion—the best 1/8-scale off-road car around, right out of the box.

INFERNO



Power for the Inferno is provided by the O.S. RX-B engine. The Rex 180-degree header makes installing the pipe a cinch.



The Inferno's new dual-brake system provides much more stopping power than the system in the Turbo Burns. Two levers allow you to increase the power to either the front or rear end.



The receiver and the battery are now on the right rear side of the chassis—where the fuel tank was on the Turbo Burns.



The Inferno has new, light, spoked, nylon wheels with BSW-40 tires.

high quality of the materials. The parts fit together extremely well, and that makes the assembly even easier.

The instruction manual has never been one of the strongest points of a Kyosho nitro-powered car. The detailed diagrams are very thorough, but the written instructions are limited. Kyosho didn't exactly "strike out" with this manual, but builders will have to pay very close attention to what they do.

Start with the front and rear shock absorbers. Most of the shock assembly has been done at the factory, but you must fill the shocks with oil. Because of my experience with the Burns and the Turbo Burns, I stuck with the original pistons. As a starting point, use Associated* silicone oil—40WT in the front and 30WT in the rear. (I recommend the Associated oil because it's pure silicone, which is very consistent and less susceptible to changes in viscosity caused by use or temperature changes.)

When I assembled the upper suspension arms, I substituted Kyosho's optional turnbuckles for the linkage that was included in the kit. They make camber adjustments a snap, and I highly recommend them for anyone who's considering racing this car.

The first sign of trouble came when I installed the front suspension arms. With the arms completely installed, there was more than 1/8 inch of space on the hinge pin, and this allowed the lower suspension arm to slide back and forth. To fix this, I needed a few 4mm i.d. washers, which weren't included in the kit.

I reached another stumbling point when I attached the rod ends to the steering linkage rods. The bellcranks on the chassis have been moved outward slightly, so it follows that the linkage rod should be shorter, but it was the same length as the linkage rod in the Burns, so the rod ends had to be screwed on further. This may sound simple,

but fatigue caused me to take at least six breaks from this part of the assembly. You can either grin and bear it, or you can cut the ends of the linkage slightly with a Dremel tool to ease assembly.

When it was time to install the center diff, I made two more changes to improve the car's performance. First, I replaced the stock, plastic main gear with a steel one. The stock unit is very strong and should last for some time, but the steel one offers a little peace of mind when you're running in a 1-hour Main. I also replaced the stock, plastic brake pads with two fiber brake pads. Again, the stock units work well, but the fiber pads are more consistent and less likely to fail.

After you've assembled the center diff, install the servos and the radio tray. I chose to use a pair of Airtronics* servos. The 94152 servo is one of the strongest and fastest on the market, and I installed it for the steering. The 94151 isn't quite as strong as the 94152, but its lightning-quick operating speed (0.07 second) makes it ideal for throttle and brake operation. Driving the Airtronics servos is a Futaba* PCM 1024 radio system. I won't go into elaborate details, but this radio has established itself as the best of its kind, and it's well suited to this application.

I installed the newest O.S.* engine—the RX-B. It produces a lot of horsepower and is extremely reliable. This was the engine of choice at many Kyosho Challenge races held around the country during the 1991 racing season. I linked the RX-B to a new O.S. tuned pipe by way of a Rex* 180-degree header and a Paris Racing* coupler. The tuned pipe requires that you install a fitting to pressurize the fuel tank. To accomplish this, I tapped the pipe with a 6-32 tap and installed a Du-Bro* pressure fitting.

Before I installed the clutch assembly, I trimmed the shoes to make them a little lighter.

(Continued on page 78)

SCOPING OUT

NOVAK'S 410-M1

by JOHN RIST

SHORTLY AFTER it was introduced, I had the privilege of testing Novak's* 410-M1c electronic speed controller (ESC). If you were to dig out that article, you'd see that I found the M1c to be a very serious ESC—one that's suitable for racing. This month, I tested Novak's newest unit—the 410-M1.

At first glance, I mistook the M1 for the

• electronic thermal-shutdown protection.

It comes with an instruction book, a battery-to-motor jumper wire, a screwdriver, a heat sink and Novak's universal input-plug system.

To verify that the M1 is truly a close relative of the M1c, I removed the four screws in the bottom of the unit and opened it up. The top and bottom of the case are

sealed by an O-ring. The O-ring gaskets on Novak's earlier, pre-high-frequency ESCs usually slipped out and dangled where the wires exited. On the M1, however, there's a large "lip" built into the bottom of the case, and the wire-exit hole has been redesigned so that the O-ring will remain in place. This new setup should go a long way toward keeping dirt out of the unit.

A look inside the M1 revealed two printed-circuit (pc) boards—one on top of the other—and many surface-mounted components on both sides of them. With the exception of the missing current-limiter test point and adjustment potentiometer (pot), the M1 did, indeed, look identical to the M1c. To find out if its performance was similar, I headed for the "Scoping Out" lab.

The M1's instruction manual is quite complete and has many good installation diagrams. The pictures are of the 410-MXc or the 410-M1c, rather than the 410-M1, but these three ESCs have many of the same features, so I didn't find the instructions confusing. The M1 is mentioned in an addendum sheet in which it's explained that the unit doesn't have current limiter, but that Novak can install one for you.

VOLTAGE-DROP TESTS

With the 410-M1 connected and running, I tested its resistance first. With 12 amps of current, the voltage drop along the length of the wires was 0.09 volt, which yields a resistance of 0.007 ohm. Two inches along the wires, the voltage drop was 0.06 volt—a resistance of 0.005 ohm. The M1's resistance 2 inches along the wires was identical to that of the M1c's, and its resistance along the length of the wires was very similar, too. If you review past articles and compare the M1's "on" resistance with that of other controllers, you'll see that this is one mean, low-loss, racing machine.

LET-IT-COOK TEST

I jacked up the current to 23 amps and let the ESC run wide open for 15 minutes. I conducted this test with the heat sinks in place, because it's hard to tell where Novak installed the heat-sensing element. (With the heat sink installed, the heat is distributed evenly and the thermal shutdown will work, regardless of where the element is.) As usual, I didn't use a cooling fan.

After 15 minutes, I checked the heat sink and discovered that the ESC was warm, but not hot. (This wasn't a surprise considering its low resistance.) If you use the provided heat sink and you position the M1 so that it will receive plenty of cooling air, it will be able to handle the hottest modified motors with ease.

DEAD-SHORT TEST

I clipped a piece of monster wire across the motor wires, and the current jumped to 40 amps, which is the limit of my power supply. (As in the "Let-It-Cook" test, I left the heat sink in place, but I didn't use a fan.) I usually conduct this test for a minute or so but, considering how well this unit had done in earlier tests, I let it run for 4 minutes—the length of most races.

(Continued on page 70)



M1c, but then I realized that the "c"—which stands for current limiter—was missing from the unit's part number. In fact, the absence of a current limiter (and the letter "c") seemed to be the only difference between the two controllers.

The forward-only, high-frequency M1 is small and light, yet it's a heavy-duty, racing-style ESC with the following features:

- Six FETs (five for forward, one for reverse);
- three large wires that provide low resistance;

**THE 410-M1 IS
DESTINED TO FIND ITS WAY
INTO THE WINNERS' CIRCLE.
IT HAS LOW "ON"
RESISTANCE AND ALL THE
ADVANTAGES OF A
HIGH-FREQUENCY ESC, I.E.,
IT PROVIDES LONG RUN
TIMES AND SMOOTH
THROTTLE RESPONSE, YET IT
LIMITS WEAR AND TEAR ON
THE MOTOR.**

After 4 minutes, the M1 was very hot, but not hot enough to trip the thermal shutdown. A 1700mAh battery pack will deliver 40 amps for about 2.4 minutes, so it seems that the M1 will be able to take a lot of abuse—including burnt-up motors and jammed gears. No controller, however, is totally bulletproof. Remember that battery packs can deliver more than 100 amps, so always back out of the throttle if things don't seem to be running right. A little common sense could prevent your very expensive equipment from being damaged.

When I had completed the bench tests, it was time for some fun. I installed the M1 in my trusty Kyosho Sideways and headed for the track!

ROAD TEST

The 410-M1 fit in the allotted space with plenty of room to spare. I installed Litespeed* connectors between the batteries and the ESC. (They cause minimal voltage loss, and they're affordable, too.) Although battery connectors make my tests (and my races) easier, I like to hard-wire the motor in place. This way, I can immerse it in a jar of Bolink* Electro Whirl cleaner while it's still hooked up, and I can run it slowly to clean it without damaging its bushings. I also used my Pit Stop radio (See "Build a Pit Stop Radio" in the August '92 issue), which enables me to operate an ESC without using a transmitter.

Because the 410-M1 is a three-wire controller, I had to run an extra red jumper wire (included). The Litespeed connectors made this difficult because I had to install both red wires in the positive connector contact. To make them fit I either remove part of the covering strands from both wires and twist them together, or I add the red jumper wire using a T-splice.

NOVAK 410-M1

DIMENSIONS:

Height	0.75 inch
Width	1.40 inches
Length	1.58 inches
Weight with wires	1.90 ounces

TUNING:

Access to controls	Excellent
Ease of adjustment	Very good

PRICE:

Sug. price	\$119.99
Warranty	90 days

ELECTRICAL:

(Manufacturer's specs)

Max no. of cells	10
Min no. of cells	Four
Max current	Unlisted
Continuous current	250 amps

COMMENTS:

Because of the 410-M1's "world-class" low resistance, it can handle modified motors and should consistently end up in the winners' circle. This small well-designed unit's output frequency switches at 2500Hz instead of the 60Hz found in most controllers. This reduces armature wear and prevents the motor from overheating, yet it improves run times and makes control smooth in the lower throttle ranges. The M1's braking action is strong, yet controllable.

Except for the absence of a current limiter, the 410-M1 is identical to the 410-M1c. If this feature isn't important to your type of racing, i.e., high-speed-oval or drag racing, truck pulling, or backyard buddy bashing, then the 410-M1 will give you a big bang for a low buck.



Resistance

TEST PARAMETERS:

Voltage

Current

Voltage drop along length of wire

Voltage drop 2 inches along wire

Resistance* to end of wires

Resistance 2 inches along wires

BEC voltage, 6-cell pack

*voltage drop/current = resistance

Regardless of the procedure, I always cover the joint with shrink-tubing or tape. A Ni-Cd pack can deliver 100 amps through a short, and it wouldn't be a pretty sight if the battery pack were to ignite.

I had forgotten how much I enjoy driving just for the fun of it. I even talked my wife, Peggy, into trying it. The 410-M1's throttle response is extremely smooth—especially at the lower speeds—so she had no trouble controlling the car. Despite the fairly high gearing, we usually achieved run times of more than 4 minutes. I checked the heat sink after each run and found it stone cold, even when the motor was hot enough to burn my finger. This is a sure sign that all the power is reaching the motor; the M1 really does have low "on" resistance. The brakes worked well and should be adequate on even the tightest roadcourses.

Although the 410-M1 doesn't have a current limiter, I've found this feature to be low on the list of those needed to win. I've spoken with racers who use controllers with limiters, and most have said that they run with the limit wide open. If

Novak's intent was to reduce the cost of the M1 by eliminating unnecessary features, the current limiter was probably a perfect candidate to receive the ax. As I mentioned earlier, though, if you find that you really need a current limiter, Novak will install one for you.

The 410-M1 is destined to find its way into the winners' circle. It has low "on" resistance and all the advantages of a high-frequency ESC, i.e., it provides long run times and smooth throttle response, yet it limits wear and tear on the motor. It can handle high current because it has large motor and battery wires, a beefy pc board and six high-quality FETs. If you're looking for an ESC with the winning ways of the 410-M1c, yet you don't want to blow your budget, the 410-M1 may be just what you need.

**Here are the addresses of the companies featured in this article:*

Novak Electronics Inc., 128-C E.Dyer Rd., Santa Ana, CA 92707.

Litespeed, P.O. Box 4765, Spokane, WA 99202.

Bolink R/C Cars Inc., 420 Hosea Rd., Lawrenceville, GA 30245.

RCTHUNDERDROME

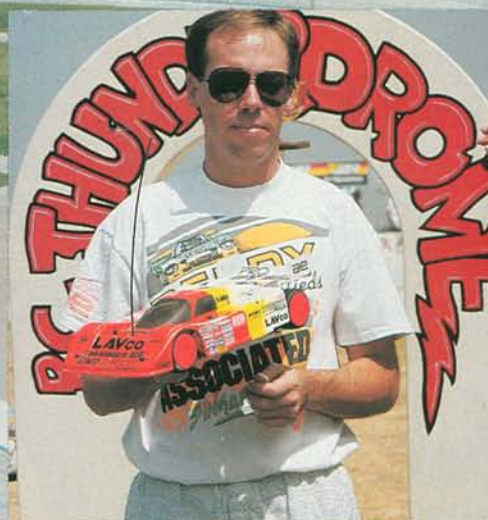
Radio Control
CAR ACTION



Futaba



Harley Cannon (left) and Larry Wodell (right) of Victor Engineering will be on hand at the Victor Power Station to help racers charge their batteries.



Here's the man to beat in the Insane Speed Run. Kent Clausen set the current record with his modified 10L SS.



GE's Miriam Lachman looks at potential Concours entrants. GE will reward this year's winner with a \$500 check.

by **GEORGE GONZALEZ**

THUNDERDROME V will be the most awesome event in R/C history. Race organizers Dan Moynihan of Dan's RC Stuff and Gary McAllister of McAllister Racing and primary sponsors *R/C Car Action* are all hard at work to ensure it. Futaba, Goodyear Tires and General Electric (GE) are also sponsoring this year's event. Bob Carpenter, executive editor of *Circle Track* magazine, and Miriam Lachman of GE's Plastic

Structured Products Division, which manufactures the Lexan that's used for R/C car bodies, both plan to attend. At this year's event, a GE representative will hand the Concours winner a check for \$500.

Reggie Murphy of All-American Racers—the Toyota GTP factory team—will park Toyota's no. 98 GTP car in the infield. The '92 Buick Regal that Mark Perry drove in the NASCAR Southwest Tour will

have a spot there, too. To keep all the contestants' batteries peaked for race time, Victor Engineering's Power Station—a battery-charging service—will also be set up in the infield, and a Victor representative will present a \$500 cash prize to whomever wins the Insane Speed Run.

Goodyear Tires has also donated a few goodies. All contestants will receive Goodyear hats, and the A-Main

The shape of

THUNDERDOME® V



NEW FACILITY

This year's Thunderdrome has a new home in Dominguez Hills, CA, at the Olympic Velodrome on the California State University campus. Believe it or not, this track is more than 80 meters longer than the original one, and it's smoother, too. What does this mean for the racers?—higher speeds, of course. Let me tell you, I was blown out of my socks when I saw R/C cars thundering down the track's 15-degree-banked straights at more than 70mph! The straights lead into two massive, two-story, 35-degree-banked turns, and looking up from the bottom of one I thought, "I hope the turn marshals bring their mountain-climbing gear!"

Insufficient parking and seating have plagued previous Thunderdromes, but this year, such shortages won't be a problem. There's seating for more than 5,000 spectators, and plenty of parking spaces for their cars as well. The facility has two fully equipped concession stands, lighting that's suitable for night color photography, and an infield with beautiful grassy areas.

Dubbed the "Daytona 500 of R/C racing," the Thunderdrome is, by far, the most anticipated R/C event of the year. Although the original site in Encino, CA, was awesome, the Olympic Velodrome promises to make this year's event the most exciting one yet.



With 1/4-scale gas cars and Kyosho's new 1/8-scale F1 cars (gas and electric), the smell of nitro will fill the air. There will also be a celebrity race in which the drivers will use Kyosho's 1/10-scale nitro Thunderbird stock cars.



Reggie Murphy of the Toyota GTP factory team stands next to a poster of the GTP no. 98 car, which will be parked on the infield.

things to come

winner will be given a Goodyear team jacket. Throughout the event, there will be drawings for four sets of Goodyear Eagle tires—yes, full-size ones! One of them will take place at Tekin Electronics' Power Breakfast—a complimentary affair for drivers that will be held at the Ramada Inn & Garden Hotel. (You must be present to win so, if you're competing, don't miss a chance to equip your car with a full set

of Eagle "meats.") And, of course, what major sporting event would be complete without the Goodyear Blimp? Yes, kids, the Goodyear Blimp will make a special appearance to mark the importance of Thunderdrome V.

Talk about plenty o' pit space! Two giant tents will be set up at the side of the track—one for amateurs, who will compete in the Futaba Amateur Challenge; the other for factory

racers, who will compete in the R/C Car Action Superspeedway Shootout. They're also large enough to accommodate the many manufacturers that will display products and hold seminars throughout the event. Don't miss the chance to check out the latest R/C accessories—from dynos to bodies—and receive tips from the pros.

Thunderdrome will be filled with excitement for contes-

Thunderdrome V—October 14-18, 1992
Don't miss out! Be there for the ultimate in R/C action!



Ichiro Inokuma, president of HPI, prepares his car for a test drive. Ichiro won the "Best Smile of the Day" award.

PRELUDE TO THUNDERDROME

Teams from Associated Electrics, Ballistic Batteries, Bolink, Cheetah Racing, HPI, Race Prep and Revtech were invited to break-in the new track and note any problems. Rubber-capped tires from CKW, HPI, TRC and Twinn-K were all used successfully. Although this wasn't officially a race, there was plenty of action as the drivers swept around the track at speeds of more than 65mph. Thanks to Dan Moynihan, who lent me his McAllister Racing car, I had a chance to try the track, too. All I can say is, "What a rush!" I couldn't resist driving the car high on the massive banked curves. It was over as soon as the batteries dumped, but I had a smile on my face for hours.

The day's goals were met: race organizers had a chance to check the Bolink/AMB 20-Car Autoscore, which performed flawlessly, and some of the most respected figures in the R/C industry tested the new track. Futaba's Don Rice gave it his seal of approval—no radio problems.

The Thunderdrome's new home has been christened; now we can all just sit back and look forward to the most awesome event in R/C history—Thunderdrome V.



Hmmm, perhaps I should have used a smaller pinion gear in my Insane Speed Run car. Maybe one day there will be 1/10-scale fire engines that can put out such fires and 1/10-scale ambulances that carry aspirin.

THUNDERDROME

"Members of all the top factory teams will race for the esteemed title of Thunderdrome Champion.."

* * * * *



Toyota's Reggie Murphy models the Goodyear gear. The A-Main winner will receive the jacket, and all the drivers will get a cap.

scale Thunderbird stock cars; another in which the contestants will battle it out with identical Bolink cars; and yet another in which the editors of *Hot Rod*, *Motor Trend*, *Circle Track* and *Car Craft* will compete using cars that are custom-painted with their magazine logos. (Carpenter told me that the editors are excited about this race; they're already betting

on who will win.)

Members of all the top factory teams will race for the esteemed title of Thunderdrome Champion, and this year's Insane Speed Run will be crazier than ever as Kent Clausen and all the pros attempt to break the 75.9mph record. In an interview with Clausen and Lavco's Mike Lavacot, it was revealed that their goal is 80mph, and they won't rest until the 100mph barrier is broken! ■

tants and spectators alike. Between the Mains, several action-packed demonstrations are scheduled, including a 1/4-scale race that folks will hear—and smell!—for miles around. (Oh, how I love the scent of nitro; it's the smell of victory.) Also on the agenda: the debut of Kyosho's new 1/8-scale gas and electric Formula 1 cars; a celebrity race in which all the entrants will use Kyosho's new 1/10-



Kent Clausen (center) works on his Insane Speed Run car while Mike Lavacot (right) and Sean Ireland (left) supervise. Let's see...this goes here, and that goes there, or maybe...just kidding, Kent. Next time, maybe your sweatshirt will say 80mph.

Andy's

R/C PRODUCTS BEST FROM THE WEST



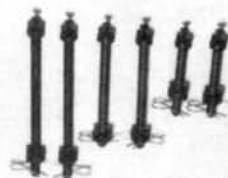
3152 LOTECH GTP, 1/10
Winner of '91 ROAR NATS
4152 LOTECH GTP 1/12 SCALE



RC-10T STADIUM TRUCK
Racing Truck body.
PART # 3033



NASCAR 1/10 • 1/12
SUPER SPEEDWAY 1/10
.030 LEXAN BODIES



BODY POST
3206 2 INCH "ON ROAD" BODY POST (pair)
3207 3 INCH "ON ROAD" BODY POST (pair)
3208 4 INCH "ON ROAD" BODY POST (pair)
3205 BODY POST SET "OFF ROAD"

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LETTERS

(Continued from page 52)

any shopping cart—there's lots of negative caster there!) Keep the tech articles coming!

ERIC JOHNSON
Spart, WI

Measuring caster is a gray area in R/C. Some people say a kingpin that's leaned back has negative caster, while others say that it has positive caster. Most measurements of caster in the full-scale automobile industry are made at the bottom of the axle center, while we in the R/C industry measure caster from the top of the axle center. Tilting the top of the axis backward is the same as swinging the bottom forward. This is where the confusion comes from. If you measure caster from the top of the steering axis, you have negative caster when the top of the kingpin is farther back than the bottom. But, if you measure caster from the bottom of the steering axis, the same situation mentioned above is an example of positive caster. For the sake of clarity, from now on, we'll refer to positive caster as being the top of the kingpin leaning back, and negative caster as the top of the kingpin leaning forward.

AS

(Continued on page 100)

KYOSHO INFERNO

(Continued from page 64)

Previous experience with the Burns cars taught me that the clutch engages a little too quickly, and trimming the shoes allows the engine to rev a little faster before the clutch engages.

To complete the chassis, install the radio tray and set up the linkage. Unlike those in Kyosho's older gas-powered cars, the Inferno's linkage is a breeze to set up. Because the brake mechanisms are very close to the servo, you can use two short pieces of linkage.

After you've installed the wing mount, the only thing that stands between you and the track is painting and trimming the body. While I was building the chassis, I decided to recruit the painting talent of Scott Bich at Bich'n Bodies*. Scott has been painting R/C bodies for some time, and his abilities are obvious; just look at the pictures!

To get the Inferno rolling, I picked up a Sullivan* Dyna-Torque starter, a glow-plug igniter and a case of O'Donnell* Racing fuel, which is specially formulated for R/C car engines and offers a degree of protection from engine damage that you can't get from most airplane fuels.

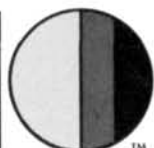
The Inferno's first run was at Del Mar beach in Del Mar, CA. Yes, it's a far cry from a track, but it makes for some great pictures! I had to spend a little time setting the fuel

(Continued on page 83)



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KYOSHO INFERNO

(Continued from page 78)

mixture properly, but from there on, it was three solid hours of full-speed blasting on the shore. Because of my interest in 1/8-scale off-road buggies, I'm rather accustomed to how these cars run. It was interesting, however, to see the reactions of onlookers as I displaced about two tons of sand during the photo shoot. Not long after I fired-up the engine, the Inferno drew a large, gaping crowd. They had never seen *anything* like this!

A few trips to local racing facilities gave me a better feel for the Inferno's on-track demeanor. My experience with the Burns cars allowed me to assess how the changes in the Inferno's design affected its performance.

The dual-braking system is, without a doubt, a very significant improvement because it allows the car to slow for cornering in less than half the distance required by the Burns cars. Brake adjustment can also be used as a tuning aid because the front and rear brakes can be adjusted independently. Like the Burns car, the Inferno tends to push slightly on slick tracks, but by adjusting the brakes slightly to favor the rear wheels, I was able to boost the car's performance on a slick track.

The Inferno is an extremely rugged car and a stout performer, and I rank it among the very

(Continued on page 86)

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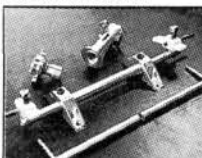
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KYOSHO INFERNO

(Continued from page 83)

best. The car has already scored a number of great victories overseas where nitro-powered racing is very popular, and I feel that it's only a matter of time before you see it at the head of the pack in the States. Add to this Kyosho's easily available replacement parts and product support through Great Planes Model Distributors, and you have what I consider to be the best nitro-burning off-road buggy for your money!

*Here are the addresses of the companies that are mentioned in this article:

Kyosho; distributed by Great Planes Model Distributors, P.O. Box 4021, Champaign, IL 61824.

Associated Electrics Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626.

Airtronics, 11 Autry, Irvine, CA 92718.

Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718.

O.S.; distributed by Great Planes Model Distributors.

Rex; distributed by Paris Racing, 4254 Independence St., Chino, CA 91710.

Paris Racing (see above).

Du-Bro Products, 480 Bonner Rd., Wauconda, IL 60084.

Bich'n Bodies, 4903 Cloverfield Rd., Pearland, TX 77584.

Sullivan Products, P.O. Box 5166, 1 North Haven St., Baltimore, MD 21224.

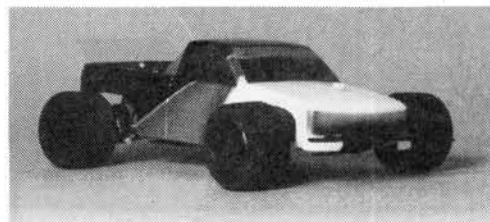
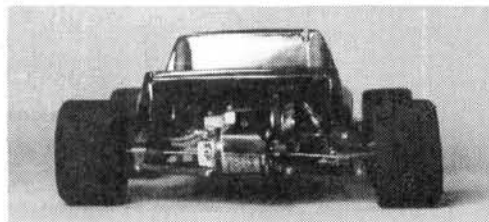
O'Donnell Racing, 10702 Hathaway Dr., Santa Fe Springs, CA 90670.



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IF YOU'RE like most people, the least-anticipated step toward completing an R/C car or truck is painting the body. Visions of torn masking tape and spilled paint jars always seem to invade the thoughts of the prospective Picasso. Fortunately, creating a truly awesome paint scheme can be easily done if you know the tricks of the trade. Rich Muise of Motion Graphics* is a premier Lexan-body artist and, in this article, he's going to show you what can be achieved with the right equipment and a little know-how.



1 Using a fine-point permanent marker, draw guidelines on the outside of the body. Draw them carefully using a straightedge and curve templates. They'll be a great help in the masking steps to follow.



2 Apply Coverite* silver pinstripes along the guidelines; these pinstripes not only add to the design, but they also make excellent color separators when you paint.



12 The last step is to add a few well-placed stickers. I use stickers from Autographics*; they look great, and they stick and conform to any surface.



HOW TO:

SIMPLE PA

Enamel Enlightenment

by RICHARD MUISE



11 Use a fine-point permanent marker to add details such as rivets, louvers, access doors, gas caps, etc. This marker also works well with drafting templates.



10 Remove the masking from the window and windshield areas, and spray on the window tint with candy-color paint or a mixture of candy blue and black that's been thinned out a lot with lacquer thinner.



9 The front of this body is molded to provide clearance for a transmission housing. I wanted this section to stand out from the rest of the body, so I masked it off separately and sprayed it silver later on. Detailing can be added to this later.





3 To create the silver sweeps on the side of the body, apply pieces of masking tape cut to the desired shape.



4 Next, mask off the areas that later will be painted hot pink and white. (See the photo of the finished body.)

M A T E R I A L S

R/C car paint—neon red, white, silver, blue, candy purple
Airbrush
Hobby knife
Lexan scissors
Coverite silver pinstriping
Autographics stickers
Flexible straightedges
Drafting templates
Acrylic lacquer thinner
Fine-point permanent marker
Tack rag
Masking tape (various widths)
Rubbing alcohol
Acetone/ nail-polish remover



5 Using an airbrush and some candy purple paint, lightly spray shading along the edges of the masking as shown in the photo. The air pressure should be set fairly low (15psi) for this step. (I normally use between 20 and 25psi for most of my airbrush work.) Wipe off any overspray with a tack cloth; then spray blue R/C car finish on the exposed areas.



6 Peel the masking off the side that will have the silver sweep. Spray a heavy swath of silver along the rear edge, and let a little overspray go toward the front of the peeled area. After the silver is dry, spray the same blue used earlier over the entire exposed area.

INT TRICKS

*Here are the addresses of the companies mentioned in this article:
Motion Graphics, 2645 Robert Arthur Rd., Westminster, MD 21157.
Coverite, 420 Babylon Rd., Horsham, PA 19044.
Autographics of California, 7401 White Ln. #1, Bakersfield, CA 93309. ■



8 Remove the masking from the center or remaining area of the body. Spray on neon red; then back it with white paint.



7 Remove the masking from the center section of the body. Spray blue paint along the outer edge of this area. Then, spray white over the entire area. As a precaution, spray silver over the white. This will keep the neon pink paint (to be sprayed later) from bleeding through the white.

PHOTOS BY JOHN HUBER



THERE WAS A time when you could create your own "racing truck" by taking an off-road buggy and adding larger wheels, tires and a body to go "do it in the dirt." Then axles bent, chassis snapped and transmissions chewed up gears with alarming regularity. Manufacturers' R&D departments went into overdrive to produce special components that could withstand the rigors imposed by the large, heavy 2.2-inch wheels and tires.

Team Traxxas* fielded one of the first trucks that was built to race—the Eagle. It sported a narrow, graphite chassis, fast-acting, direct steering (no bellcranks; there weren't any high-speed/high-torque FET servos then) and a noisy, but darned-near indestructible ball-diff transmission that was adapted from that on the venerable Bullet buggy. Then came the Blue Eagle, which incorporated

changes that enabled Traxxas to win the '90 NORRCA Nats: bellcrank steering, better geometry and an excellent ball-diff/slipper-clutch tranny. But this team hasn't just been sitting idly in its saddle.

At the '91 Chicago Model Hobby Show, I glimpsed a truck in the Traxxas booth that was quite different from the Blue Eagle. When I started to ask questions, the Traxxas reps just smiled and said, "It's not 100 percent yet, but when it is, we'll release it!" At the LA Hobby Show in March, I made a beeline for the Traxxas display. There it was—the Blue Eagle LS! I was so excited that I forgot to ask what the "LS" stood for—"Lone Star"? (A logical guess; the Traxxas headquarters is in Texas.) From its sleek appearance, a more appropriate guess might be "Lotta Speed"! I counted the days until this animal hit the shelves.

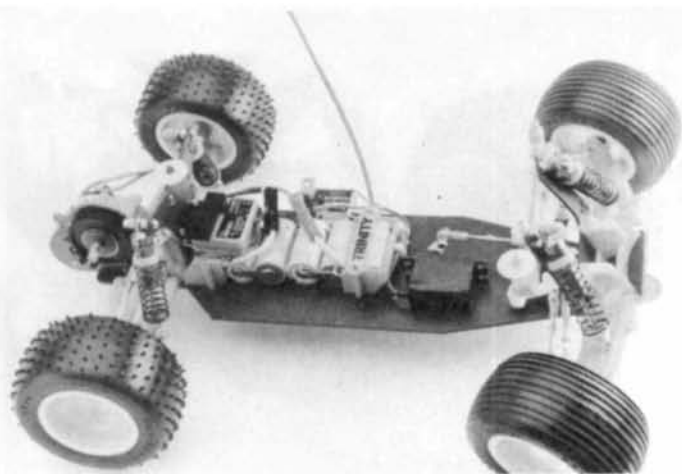
T
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Blue Eagle

Lone star stomper!



by LOU MARCIELLA



The LS is a refined version of the Blue Eagle. Its most notable improvement is a wide graphite chassis that has a 30-degree front kick-up.

SPECIFICATIONS

ManufacturerTraxxas
Type2WD truck
Scale1/10
Price\$350

DIMENSIONS:

Overall Length18.25 inches
Width12.25 inches
Wheelbase11.5 inches
Front Track10 inches
Rear Track10 inches

WEIGHT:

Gross (with battery)....3 pounds
12.19 ounces

BODY:

TypeRace truck
MaterialPolycarbonate

CHASSIS:

TypePan
MaterialGraphite

DRIVE TRAIN:

PrimaryGear
TransmissionGear
DifferentialBall diff
Bearings/BushingsBall bearings

SUSPENSION:

Type (f/r)A-arm with upper control link
Damping (f/r)Oil-filled, coil-over shocks

WHEELS:

Type (f/r)One-piece dish
Dimensions
(DxW) (f/r)2.2x2 inches

Blue Eagle LS

TIRES:

FrontRibbed
RearSpiked

ELECTRICS:

Motor05*
BatterySix or seven cell*
Speed ControllerElectronic*

OPTIONS AS TESTED:

Trinity Pushed Panasonic P-170 SCRs, Trinity Flash Point 14 single motor; Bich'n Bodies Custom Paint Job; TRX-1 steering sector arm; Novak 410-M5 ESC; Novak NER-3FM receiver; JR PROPO NES 2135 servo; Magic Motorsports diff rings; Racer's Choice diff balls.

COMMENTS:

The Blue Eagle LS (Long Suspension) is the most recent Eagle truck from Traxxas. With a new rear suspension and subtle changes to its front end, the LS is more stable than previous versions and is more competitive against other trucks on the market. With a good driver, nothing could stop the LS from being one of the best trucks on the market.

*not included

"Traxxas is the only company that has designed a true truck tranny, and it's capable of taking on the hottest mod motors on the market."

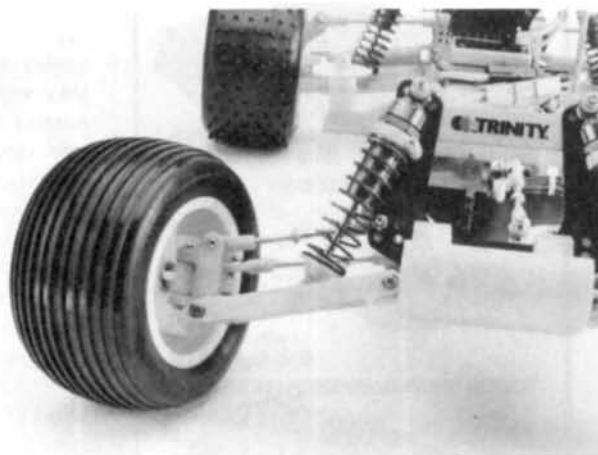
Finally, it did. When I got it home, I spent an hour looking at the colorful box, its contents and the excellent instruction manual that included set-up and racing tips. Because I had experience with Traxxas kits (a Sledgehammer, a Hawk, a Blue Eagle and a TRX-1), I knew that the construction would be simple, straightforward and fun, thanks to the excellent quality control!

LS-TRIOUS IMPROVEMENTS

Just what improvements have been made to the Blue Eagle to produce the LS? Most obvious is the flat, wide, ultra-rigid graphite chassis with 30-degree kickup in the front. I can't stress enough the importance of chassis stiffness. Flex throws off the best suspension designs because it's the great unknown. Your best efforts to set all the

namics. The Pro-Trax Mega pin-spoke rear tires and multi-rib fronts look as if they can really devour some dirt, and the sexy, slippery LS body has my vote for being the best-looking, low-profile, narrow truck body on the market!

Here are some of the other differences I found when I closely compared the LS with my Blue Eagle: the front and rear axles have been shortened to accept the new "lite" dish wheels (these axles are also less likely to bend than the old, longer ones); Pro Series front and rear caster blocks have been included to give the LS the correct geometry for the best possible steering, handling and suspension operation; because they're made of stainless steel, the Pro Series black shock springs retain their tension much longer than other springs; special blue shock



Among the other improvements on the LS are Traxxas' Pro-Series front caster blocks, new black springs and shortened front axles that accommodate the new "dished" wheels.

suspension parameters (oil, spring rates, caster, camber, etc.) correctly will be for naught if the chassis isn't rigid!

The ultra-light cone-dish wheels may not look as trick as the Blue Eagle's deep-dish chrome ones, but they're far more functional and aerody-

seals virtually eliminate rod friction and allow the shocks to be compressed and to rebound more smoothly; extra-long rear A-arms and slider shafts center the arms' pivot point to increase the suspension's travel, smoothness and stability; and the simple three-gear transmis-

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BLUE EAGLE LS

sion is equipped with Pro Series high-speed black gears that reduce mass and improve reliability and acceleration. The best news of all is that Blue Eagle owners can purchase these economically priced parts as their pocket-books allow to bring their Eagles up to LS specs.

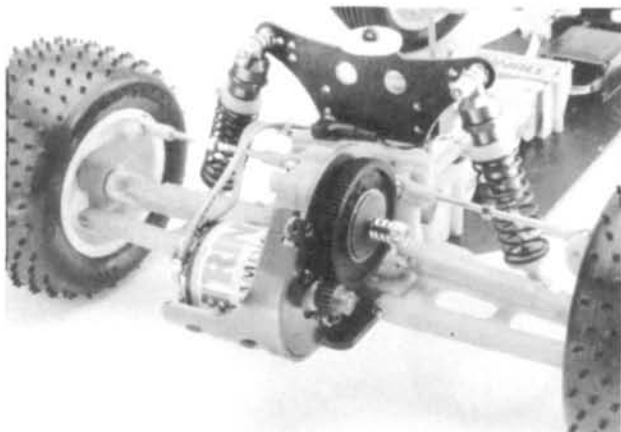
BUILDING THE BEAST

I set the necessary tools on my workbench, and I put a piece of cut-pile carpeting on my work area; this practically eliminates the chance that small parts will accelerate into "warp-drive," never to be seen again! I unbagged all the nylon parts and boiled a pan of Litespeed* "dylon" hot pink dye. Thirty minutes later, I had some really "rad"-colored LS parts. (When you boil parts to dye them, you also make them stronger.)

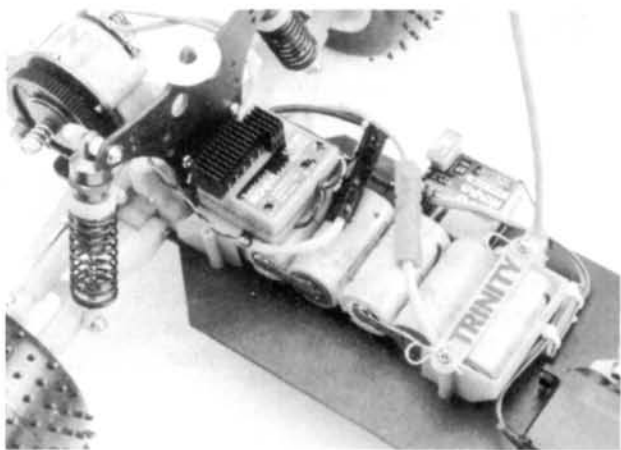
The LS went together without any surprises. Everything fit perfectly, and I didn't have to use a file or an X-Acto knife to remove any flashing. The supplied 5x11 stainless-steel ball bearings appeared to be of very high quality, and I appreciated that they were all one size—no hassles trying to remember odd sizes for the wheels, tranny, etc.

Using the proper lubricants during assembly and maintenance is extremely important, so I picked up an Endurance Racing Products* lube pack for the bearings, the diff and the motor. In an effort to make the ball diff as smooth and rugged as possible, I added Magic Motorsports* notched, hardened diff rings and Racer's Choice* 1/8-inch-diameter tungsten-carbide diff balls. The result was an ultra-smooth diff that can handle the nastiest modified motors.

I like the drag-link steering in my TRX-1, so I decided to use this setup for the LS instead of the supplied ball-



Longer A-arms and slider shafts are used in the rear of the LS. The tranny is equipped with Traxxas' durable black gears.



The chassis is wider, so there's more room for the radio gear. Novak's reliable 410-M5 ESC sends the Trinity P-170 power to the motor.

link fixture; now, the LS has "no-slop" steering. All the shocks have single-hole pistons, and I topped them off with Associated* 20WT silicone. You'll have to play around with these adjustments to achieve the best results at your track, but the Traxxas manual offers excellent starting points.

After I had completed the rolling chassis, two questions entered my mind: why didn't the LS come with the hard-anodized, Teflon-coated shocks found on the TRX-1, and why didn't Traxxas use the compact TRX-1 tranny on it? The Traxxas service department enlightened me. The shocks would have raised the kit's price, and the people at Traxxas chose to invest in the strongest, light-

est graphite chassis available rather than spend money on a less important add-on such as the shocks. The kit's blue, T-6 aluminum units work beautifully and don't seem to leak, but if you're going to lose sleep because your buddy's truck has the high-tech bouncers, don't. Traxxas offers the hard-anodized, Teflon-coated shock bodies for the LS.

Why wasn't the TRX-1 tranny used? A buggy transmission can't provide the necessary acceleration for a racing truck, nor can it withstand the abuse from the larger, heavier wheels and tires. Traxxas is the only company that has designed a true truck tranny, and it's capable of taking on the hottest mod motors on the market.

(Continued on page 98)

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BLUE EAGLE

(Continued from page 96)

BODYWORK

What about the body? It looks so cool, and Traxxas obviously paid a great deal of attention to its wind-cheating characteristics, so I didn't want to ruin it with one of my lousy paint jobs. I sent it to Scot Bich of Bich'n Bodies*. He waved his magic airbrush over it, and it came out so nicely that I hate to get it dirty! (My cat was happy when I didn't pull out any spray-paint cans. I guess he remembered the blue-and-silver tail I gave him a year ago.)

To electrify this Texas tornado, I chose a JR-Propo* NES-2135 servo, which has 73.72 ounce/inches of torque and a fairly fast transit time of 0.19 seconds/60 degrees. After I had mounted a Novak* NER-3FM mini-receiver on top of the battery cup, I robbed my Blue Eagle of its Novak 410-M5 ESC and installed it. (Have you noticed that this incredibly inexpensive ESC keeps popping up in so many of the pros' cars?) To propel my dirt rocket, I decided that the LS deserved nothing less than a Trinity* Flash Point 13 single motor. I made some careful calculations based on the truck's excellent 2.72 final drive ratio, and I settled on an 84/19 spur/pinion combination. Litespeed super-connectors married the Trinity Pushed P-170 batteries and the motor to the ESC. I mounted the body and adjusted the ride height and the camber. I dropped the truck from a height of 5 or 6 inches, set the front and rear A-arms so that they were parallel to the ground and dialed-in 3 degrees of negative camber all around using my handy RPM* gauge. I set the front tires with absolutely no toe-in/out, because it suits my driving style.

I went off to the track with very high expectations, and the LS didn't let me down! The Blue Eagle's legendary, smooth handling was still there and, thanks to the many upgrades, this truck runs like a mountain lion tracking

(Continued on page 100)

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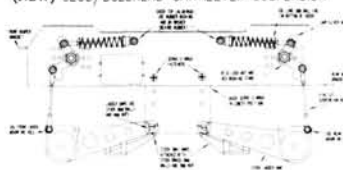
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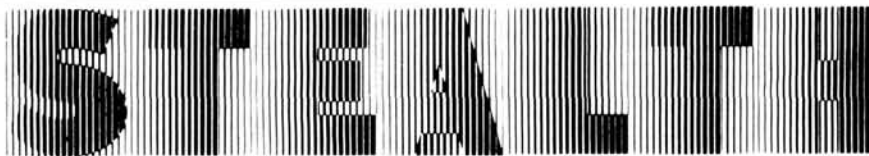
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BLUE EAGLE

(Continued from page 98)

down its prey! The "baddest" jumps were taken with the greatest of ease, and the LS carved through the turns as if it were on rails. I was pleasantly surprised by the superb performance of the Pro-Trax tires, especially because I wouldn't have to spend any money on new rubber! The LS flew past everything on the track, and by the time I returned to the pits, several racers were anxiously waiting to eyeball this new land missile! There was no doubt that the LS would cause some fireworks in the upcoming modified-truck race!

The "Team Texas" cowboys have thrown their hat into the R/C corral and "Doc" Losi and the Associated gang had better look out. All things considered, the Traxxas Blue Eagle LS is so good that it should come with a mask and a silver bullet! Set it up properly and practice, practice, practice, and maybe y'all can race off into the sunset. "Hi-ho, Blue Eagle—away!"

*Here are the addresses of the companies mentioned in this article:

Traxxas Corp., 12150 Shiloh Rd. #120, Dallas, TX 75228.
Litespeed, P.O. Box 4765, Spokane, WA 99202.

Endurance Racing Products, 826 N. Lamb, Las Vegas, NV 89110.

Magic Motorsports, a subsidiary of Trinity Products, 1901 E. Linden Ave. #8, Linden, NJ 07036.

Racer's Choice/Arrow Tyres USA, 6N258 Acacia Ln., Medinah, IL 60157.

Associated Electrics Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626.

Bich'n Bodies, 4903 Cloverfield Rd., Pearland, TX 77584.

JR Propo Remote Control, distributed by Hobby Dynamics Distributors, P.O. Box 3726, Champaign, IL 61826.

Novak Electronics Inc., 128-C E. Dyer Rd., Santa Ana, CA 92707.

Trinity Products Inc., 1901 E. Linden Ave. #8, Linden, NJ 07036.

RPM, 14978 Sierra Bonita Ln., Chino, CA 91710.

LETTERS

(Continued from page 78)

SPECIAL K ?

For about three or four months, I've been seeing the new Tekin 410K and 411K ESCs advertised by mail-order companies in your magazine. Are there differences between these two speed controllers, and if so, what are they? Also, when are you going feature these ESCs in "Scoping Out"? I've been reading your magazine for three years, and I must say that it's the best thing going. Peace.

RICHARD NUKOLCZAK
Baltimore, MD

There are several features that distinguish the 411K from the 410K. The 411K is designed for use with four to 11 cells, whereas the 410K is designed for use with four to 10 cells. Also, the 411K has a sensitivity-adjustment mode that automatically compensates for harsh shocks that can sap a battery of its voltage. This helps to conserve battery power and prevents the pack from dumping prematurely.

(Continued on page 104)

DRESSED TO KILL!

In the same way as the T-Birds have been killing the competition at Daytona and Talladega, PROTOform bodied racers have been doing the same at King and Whippoorwill.



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PROTOform

LETTERS

(Continued from page 100)

According to the people at Tekin, the 411K has a host of other features, but they were hesitant to disclose them at this juncture. (Sounds like President Bush, doesn't it?) Look for the 411K to hit the hobby-shop shelves early in '93.

We've just finished a "Scoping Out" on Tekin's 410K. Look for it in the Radio Control Racer—an Action Series special—and in a future issue of Car Action. FM

WE DID, WE COULD, WE WILL

I was into car racing for about 10 years, but I'm just getting back into it now. Have you ever done a "Track Report" on a Delta (I think it's the Villain), and if so, in which issue did it

appear? If you haven't done one, would you?

JAMES NICEWONGER

Lincoln, NE

If the car you're referring to is, in fact, the Delta Villain, look back to the December '89 issue for an in-depth "Track Report" by Joe Bruni. Oh and, by the way, welcome back!

FM

REAL PROBLEMS...NOT!

I'm having a hard time trying to pick an R/C race truck or buggy. Right now, I'm looking at an Associated RC10T, a Losi Junior T or Junior Two, a Kyosho Outlaw Ultima or a 4Runner, a Lazer ZX-R or ZX-Sport and a Traxxas Blue Eagle LS. Please help! Can you

give me more information on these vehicles? Can I use a DuraTrax saddle-pack battery in Losi and Associated cars? I also own a Kyosho Big Brute (awesome), a Rampage (bitchin') and a Raider Pro (coooool).

CHRIS DUGGAN

Trenton, MI

All right, Chris, here we go. For more information on the vehicles you've listed, check out the following back issues of Car Action: November '91 (RC10T); December '91 (Junior T); May '91 (Junior Two); February '91 (Outlaw Ultima); June '92 (4Runner); and February '92 (Lazer ZX-R). We feature the Blue Eagle LS in this issue.

(Continued on page 143)

FLY PSE AIRLINES

Fly to the finish line with the new PSE MAZDA RX 792P.

Patterned after it's full size counterpart which has revolutionized the face of full size GTP racing, this beauty is sure to do the same for radio control racing. Recognizing that the secret of this design is in its aerodynamically correct lines, it was our intent to bring these same advantages to 1/10 and 1/12 scales... and we succeeded. Ask about them at your favorite airport raceway.



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99002 1/12

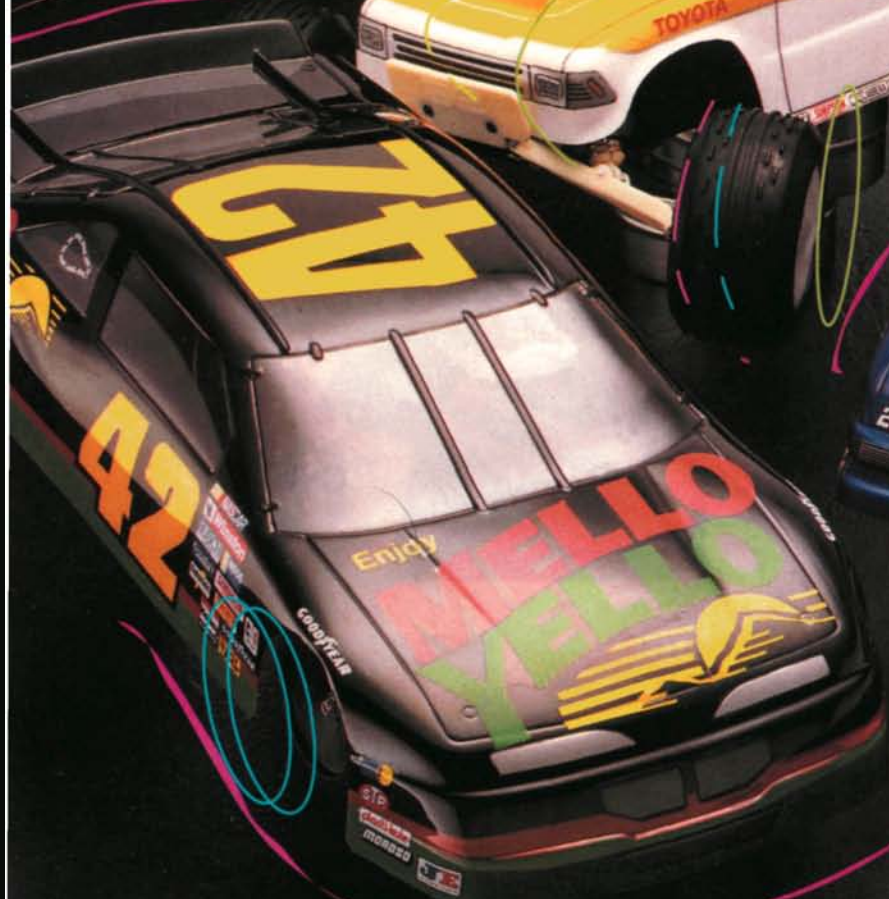
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GOLF

by ALEX STROUTHOPOULOS

IN THE LATE '70s and early '80s, R/C cars were primitive at best. With crude transmissions and suspensions, early R/C cars were basically static models with radio gear. Despite this, R/C car enthusiasts seemed to pit their cars against one another whenever they congregated. This competitiveness led to the release of purpose-built racing cars, by far the largest manufacturer being Tamiya.

The VW Group 2 Golf Rabbit Racer was one of the

first racing cars Tamiya produced. Designed for the growing $1/12$ -scale indoor class, the Golf had several features that set it apart.

BACK TO BASICS

- **Rear end.** The Golf's rear has a metal pod that houses an RS-540S motor, a straight axle and a resistor speed controller. The pod is screwed to a fiberglass chassis plate that runs to the front of the car. On top of the fiberglass plate, there's a metal plate that holds all the radio gear.

Par for the course!



PHOTOS BY JOHN MUSEY



Time Warp

TAMIYA GOLF

Manufacturer Tamiya
Type On-Road
Scale 1/12

DIMENSIONS:

Overall length 13 inches
Width 7.75 inches
Wheelbase 8.25 inches
Front track 5 inches
Rear track 5.25 inches

WEIGHT:

Gross
(with battery) 2 pounds,
8.01 ounces

BODY:

Type VW Golf
Material Lexan

CHASSIS:

Type Pan
Material Fiberglass/
aluminum

DRIVE TRAIN:

Primary Gear
Transmission Gear
Differential Gear or
straight axle
Bearings Ball bearings

SUSPENSION:

Type (f/r) None
Damping (f/r) Chassis flex

WHEELS:

Front: Type One-piece
plastic

Dimensions
(DxW) 1.375x1
inches

Rear: Type One-piece
plastic

Dimensions
(DxW) 1.375x1.375
inches

TIRES:

Front "Diplo"
Rear Foam

ELECTRICS:

Motor RS-540S
Battery 5- or 6-cell
battery

Speed controller Mechanical

OPTIONS TESTED: KO Propo EX-5
radio; Dean's Connectors.

COMMENTS: though it isn't a Corally or an Associated car, the Golf is cool—to look at and to drive. I think that it's the first R/C car ever to come with a Lexan body, and the body is a work of art. Although I doubt that the Golf would hold up well against today's sophisticated racing cars, I definitely think that it's a great example of Tamiya's pioneering spirit.



When it was first introduced, the Golf was considered to be a true racing car. Notice that the battery is held in place with a rubber band!

• **Front end.** Here, there are two suspension mounts that look much like those on Associated's on-roaders. They hold floating kingpins and steering-arm assemblies.

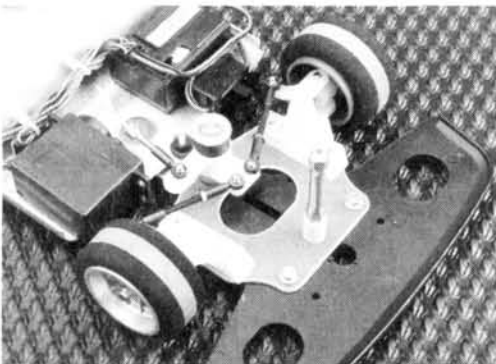
• **Extras.** The car's front and rear axles have ball bearings, and its front end features adjustable tie rods for toe-in/out. There's a choice between either a gear diff or a straight axle. When this car was

fine—even the foam tires, which I thought might have dried out!

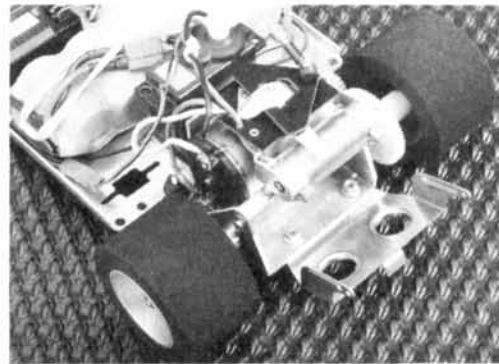
HEY!...NO PROBLEM

I had no problems putting the Golf together; the kit was definitely up to par.

The finishing touch is the body; I think this kit was one of the first to have a Lexan body as standard equipment.



Left: the Golf's front suspension has steering blocks that resemble the blocks on Associated's on-road cars. Steering is handled by a bellcrank-style linkage with a heavy-duty, built-in servo-saver. Right: the rear power is home not only to the motor and axle, but also to the wire-wound mechanical speed controller. The Golf uses a gear diff or a straight axle! You choose!



produced, these two options were highly coveted in racing circles.

• **Tires.** Foam tires in the rear and "Diplo" tires up front do the job. "Diplo" tires are made of a foam-and-rubber combo. The manual claims they handle the corners as well as foam tires, and the rubber part causes less drag on the straights.

The Golf kit that I'd be building was at least 10 years old, so I wondered whether parts might be missing or damaged. I found only one problem: the rubber cement for gluing the tires to the rims had dried in the tube! The other parts were

Molded of Lexan, the highly detailed body has a plastic front end and plastic trim accents. I didn't trust myself to finish what might be the last Tamiya Golf body left in the universe, so I sent it to Richard Muise at Motion Graphics. I also sent the box so that he'd have something authentically '70s to work from and, as usual, the body he sent back knocked us off our axes—in a manner of speaking!

GOLF ON COURSE

My trusty KO Propo EX-5 radio with the supplied receiver and servo

TAMIYA GOLF

fit perfectly, but I had a problem fitting the battery. The Golf was designed for five cells, not the six or seven that we're all now used to! Knowing I had to find a solution or die, I re-assembled one of my 6-cell packs to fit the car. My speed-controller connector didn't match the supplied one, so I swapped them for Deans connectors.

GOLF TO GO

The full-size Golf was a track terror in Group 2 racing. Outfitted with a thoroughly massaged 1600cc engine that was capable of up to 180hp, the Golf breathed fire and scorched rubber!

Obviously, the scale version doesn't go as fast as the big one, but it's no slouch, either! We tested it on a parking lot and a small carpet track. The RS-540S motor wasn't exactly ballistic, but it did provide enough power. The Golf's limited suspension worked well on smooth

surfaces, but bumps sometimes made it swap ends.

On carpet, the Golf worked well, but not like a current Corally or Associated car. Although the Golf was originally designed for racing, the best part isn't racing it, but seeing and building it. It really is amazing how far chassis and suspension design have come since it was introduced.

The next time I go to the track, I'm sure the Golf will come out during the break before the Mains for a few rounds—just for old times' sake. ■



RADIO CONTROL CAR ACTION

RACER NEWS

WORLD CLASS RACING

ASSOCIATED UPDATE

According to Team Associated's **Cliff Lett**, he and the rest of Associated's design and production staff have been updating components for several existing designs. First, a **new front end** for the RC12LW, the RC10L and the 10LSS is in its final stages of development and should see production by the time this issue hits the stands. The new front end allows for adjustment of both caster and camber and, to some degree, adjustment of camber gain/loss. According to Lett, the new suspension design can be likened to "an inverted MacPherson strut." Handling is said to be "more forgiving," especially during the last few minutes of 8-minute, 1/12 scale races, where the tires have a tendency to "go away." In addition, the new front end is designed to be mounted using the chassis' existing holes—no drilling required.

If you've been curious as to the whereabouts of Associated's forthcoming **Stealth car**, you're not alone. Associated's goal is to design a 2WD car that's superior to what's currently available on 99 percent of all tracks—no easy task. The prototypes used at the '89 and '91 World Championships were designed specifically for the Worlds tracks (i.e., the hard-packed Australian track and the soft, loamy Detroit track). When Associated feels that the Stealth will outperform the Team-Car in most every category, it will release it. Look for the Stealth sometime in '93.



Finally, rumors that Associated has been doing some subtle tweaking on its **RC10T** have been confirmed. Different suspension components that will enable the RC10T to take full advantage of today's most sophisticated tire designs are being tested by team drivers and will be available as soon as exact configurations are confirmed. **Suspension arms** made from a stiffer material, and slightly different **shock towers** are among the changes considered by Associated.



DOSECK DOMINATES

Chris Doseck, best known for his 1/12-scale on-road and 1/10-scale superspeedway prowess, has once again proven his versatility. Driving Custom Works cars, he won both the 2WD and 4WD Modified A-Mains at the '92 **ROAR Dirt Oval Nationals**. In the 2WD Stock Class, **Don**

Vitale of Harrisburg, PA, took the win, while **Darrel Winslett** of Lawrenceville, GA, dominated the Eastern Dirt Modified Class. Both drivers used Custom Works Intimidators. In the increasingly popular Modified Sprint Car Class, **Johnny Boccoli** drove his Trinity ReFlex 10 sprint car to victory.

* * *

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RACER NEWS

BUDGET TRX-1 FROM TRAXXAS

The hot scoop from down south is that Traxxas—the new kid on the block as far as serious 2WDs are concerned—is working on an **inexpensive sister car to the TRX-1**. By eliminating the most expensive items in the TRX-1 kit (the ball bearings and the graphite chassis) and replacing them with less expensive versions, Traxxas has reduced the retail price. The new kit isn't for the top-level racer; it's for someone who wants a race-worthy car without the exorbitant cost of a competitive kit. Features on the new car are still sketchy, but we do know that a double-decker **fiberglass chassis** is definitely part of the plan. Other options rumored to be included are a new front bulkhead



(required, since fiberglass can't be molded with kick-up, like graphite), a nylon battery holder that runs the length of the battery, a new rear bulkhead and a new front shock tower. Team Traxxas drivers are currently testing cars that are equipped with the new mods, and they've had some success at the Florida

Winter Champs and the NORRCA Off-Road Nationals. Early reports show that cars with the fiberglass chassis handle better than ones with the graphite chassis because of the extreme stiffness of the double-decker design. Rumor also has it that a conversion kit will be offered that allows Rad 2 owners to add the fiberglass chassis and related mods to their cars.

"Magic Act" in Orlando

Not only was Trinity's Joel "Magic" Johnson victorious in the 1/12-Scale Modified Class at the '92 ROAR On-Road Nats, but he also managed to take the gold in the 1/10-Scale Modified Class. Joel was TQ in 1/12-Scale Modified, and Tyree Phillips sat on the pole in the 1/10-Scale Modified Class. In the Stock Class, it was Greg Klugh all the way. Not only did Greg TQ the 1/12 and 1/10 classes, but he also won both Mains—no easy feat.



NEW NOVAK ESC.

Novak took both Modified Classes at the ROAR On-Road Nats with an updated version of its 410-M1c. According to Novak's Tyree Phillips, this new speed controller—dubbed the **410-HPC HyperFET**—has transistors that give the 410-HPC the lowest on-resistance of any speed controller currently available. Novak will test the 410-HPC at both the 1/10- and 1/12-Scale Worlds this year. Look for a release sometime this fall.

* * *

CUT TO THE CHASE.

Twister Motors is introducing a new lathe that can cut the commutator of a stock motor while it's still in the can. The new lathe was designed to recondition stock motors and save you money in the long run. It wasn't designed as a way to cheat. So, for those of you who thought there was a new way to cheat, you're wrong. This is just a way to prolong the life of your sealed end-bell motor.

BY NOW, most *Car Action* readers have heard of Jack Johnson. Jack's one of the premier off-road drivers in the world, having won numerous NORRCA and ROAR national championships as well as finishing third in the 4WD class at the '91 IFMAR Off-Road Worlds. You may also know that Jack races for Team Losi, where he's also the manager for its racing team as well as R&D technician. What you might not know, however, is that Jack has been bitten by the gas racing bug and recently drove a Kyosho® Inferno to victory at the Kyosho/*Car Action* Southeast Gas Off-Road Challenge, held in Savannah, GA.

DANTE DOES DIRT

The Inferno is the successor to Kyosho's Burns and Turbo Burns line of 1/8-scale gas off-road buggies, and it features many of the upgrades made by owners of Burns cars to bolster performance and reliability. Johnson's Inferno was basically box-stock when he took the checkered flag in Savannah; there weren't any "one-off" parts or expensive modifications—just Johnson's tuning and driving expertise.

As stated previously, Johnson's car is basically stock. A rigid aluminum chassis serves as the platform for the Inferno's front and rear gearboxes and suspension, while an aluminum

radio tray, which is easily removed for maintenance, provides secure mounting for the servos and receiver. Johnson used Kyosho's optional aluminum radio-tray mounting posts, which reduce radio-tray flex when the steering servo is in use; this improves both steering precision as well as response to driver input. On the subject of servos, Johnson used



JUMPIN' JACK'S

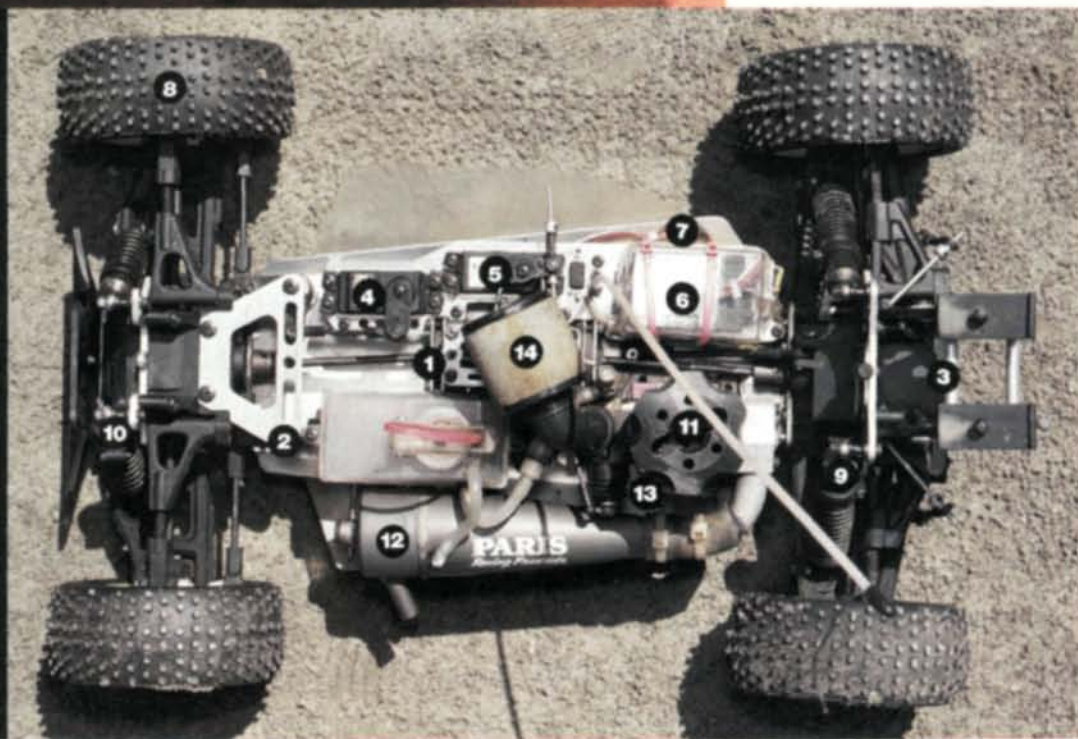
by FRANK MASI

INFERNO



**INSIDE
THE
SOUTHEAST
GAS
OFF-ROAD
CHAMPION**

1. BSW-52 fiber brakes
2. BSW-54 aluminum posts
3. 2 degrees rear toe-in
4. Futaba 9302 steering servo
5. JR NES 2035 throttle servo
6. JR 3CH receiver
7. 5-cell 1000mAh pack
8. Bess TR-88F1 tires
9. 30WT shock oil rear
10. 30WT shock oil front
11. Paris RX-B
12. Paris AL-650 pipe
13. Kyosho heat-sink engine mounts
14. OS Super air filter



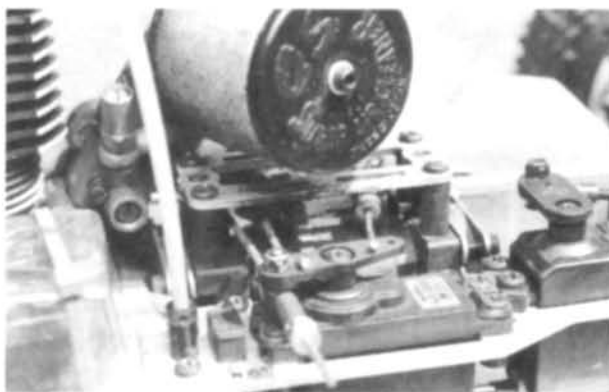
PHOTOS BY JOHN HUBER

JACK'S INFERNO

a Futaba* 9302 to handle the steering chores. With a transit time of 0.19 second/60 degrees and 99 ounce/inches of torque, the 9302 is a natural choice for serious gas off-roading.

DIRT DRIVE

The drive train of Johnson's Inferno is like that of any other; twin drive shafts emanating from a central differential transfer the engine's power to front and rear gearboxes that are equipped with bevel-gear differ-



The Inferno's dual-brake system allows the front and rear brakes to be adjusted independently. The new O.S. Super Air Cleaner filters out even the finest dust.

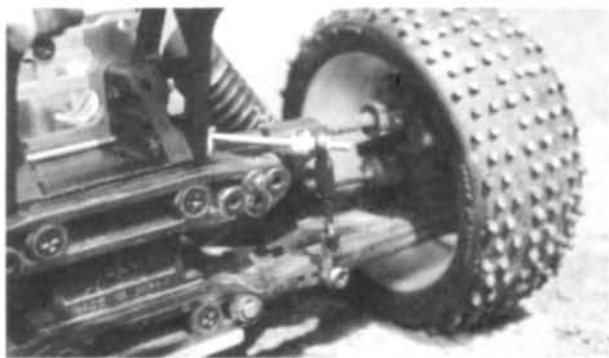
BRAKE DANCING

Just as it's important to have an efficient drive train to maximize engine power, it's equally critical to have a good braking system to accurately set up for tight corners and to execute difficult passes. The brake system on the Inferno is one of the best I've seen. It's a dual-disk arrangement, and its design allows precise adjustment of both front and rear bias. The brakes on Johnson's Inferno are set so that very little front braking occurs,



Paris's modified RX-B with a Paris AL 650 pipe really puts out the power. The RX-B can be identified by the black head on its heat sink.

entials. A pair of universal joint drive shafts mates each diff to the wheels. Stock Infernos use universals up front and standard dogbones with separate axles in the rear; Johnson replaced the rear dogbones with a pair of universals to reduce drive-train friction and smooth out suspension action. The only modification Johnson made to his Inferno's drive train was to fill all three differentials with "Ronnie Grease"—a super-thick lube sold by Ron Paris*. By doing this, each diff's action is damped significantly—enough to enable it act as a limited-slip diff. This means that when one of the front or rear tires leaves the ground, the other tire will continue to receive drive from the engine. Normally, the tire in the air would be made to rotate faster while the remaining tire would lose drive until the other came in contact with the ground once again. The same applies to the center diff: if either the front or rear end of the car left the ground completely, the other end would continue to receive drive.



The Inferno has four upper link-mounting positions to help dial it in to a variety of tracks. The rear sway bar is standard equipment.

yet the rear brakes actuate very strongly. This negates a dual-disk-equipped car's natural tendency to understeer when brake is applied. Also, Johnson opted for Kyosho's BSW-52 Fiber Brake Discs instead of the standard kit's disks. By doing so, disk wear is minimized so that braking is consistent throughout long qualifiers and Mains. Quick throttle and brake response is vital, so Jack installed a JR* NES 2035 servo. The 2035 features 47.2 ounce/inches of torque and a transit time of 0.19 seconds/60 degrees.

(Continued on page 150)

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**14
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Be like Mike!



by JEFF BRONSTEIN

TEXAS



BIGGIE!

THE STATE OF Texas has long been one of the serious hotbeds of 1/8-scale on-road racing. Two years ago, the Dallas racers hosted the largest 1/8-scale ROAR Nats ever held and, most recently, Austin was the site of the IFMAR 1/8-scale World Champs. Another of Texas's long-standing traditions is one of the top, national, club-sponsored races in the U.S.—the Texas Biggie.

The 14th running of the Texas Biggie was hosted by RCRC of Dallas and held at Indy R/C World's new 1/8-scale speedway in Mesquite, TX. Once thought of as a "glorified club race," the Biggie now has a wide appeal throughout the Southwest and the Midwest. The atmosphere at the Biggie is always good-natured, which allows everyone to cut loose and enjoy themselves. For the past two or three years, the race has attracted a near-Nationals level of competition, and this year was no exception. Although the race was threatened by fierce thunderstorms all weekend, the excellent track staff and club officers pulled off another great event.

The permanent speedway—an unexpected pleasure for many of the visitors who weren't accustomed to such excellent facilities—was a challenge, even for national-caliber racers. The track is sanded for an ultra-smooth finish, and then sealed with a material that's often found on tennis courts. This high-traction surface helps to reduce tire wear. The course has a fairly long back straight with a big half sweeper at the end. Then it cuts back into a left-hand carousel and a short straight in front of the drivers' stand. A quick right is followed by a 180-degree left turn and another sharp right. If you don't overshoot any of these turns, you're set for one more 180-degree right followed by a sweeping left turn and then a right back onto the straight. Just for grins, nearly every corner has those threatening plow-disk-size dots to keep you on your toes.

QUALIFYING

Six rounds of qualifying were scheduled for the Pan class, 2WD and 4WD. Of particular note, the Pan Class is



This small race trailer is a great idea for racers who travel to out-of-town events.



This 1/4-scale GTP RACO car was on hand to promote the 1/4-scale track in the Dallas area.

still very much alive in Texas, and several drivers built and drove scratch-built cars. In the first round of Pan qualifying, Bailey Whitley drove a "Charlie Car" and posted a time that would have easily qualified him in the top five for the 2WD suspension class. Sean Cochran of Team Delta and Pro-Car flew in 2WD and nearly hit 18 laps his first round. Jeff Ball and Tommy Portfirio were hot on his heels, but they didn't have nearly the traction or handling.

The hands-down favorite in 4WD, Mike Swauger, sat the first round out while Associated/Paris Racing teammate Mark Blackketter set the pace with the only

19-lap qualifier. Scott "Taco" Barrera missed a 19 by only .01 second to place him solidly in 2nd. Barrera, who came up through the 2WD ranks in Dallas, is now one of BMT's top new drivers in 4WD. He plans to be a real threat in the ROAR Nationals.

At the end of the first day, Whitley bettered his previous time by a full second in Pan Class, but Rudy Williams and Jim Anderson were coming on strong. BMT's 2WD top gun, Portfirio, posted the only 18-lap qualifier in the second round to take over the top spot. B.J. Tanniehill and Dave Siebert also moved up several spots to tighten up the 2WD pack. Swauger's first run in 4WD blasted into the 19s past Blackketter and Barrera to capture the number-one position. Although practice was scheduled for after

When Mike Saputo of St. Louis goes to a race, he takes the whole hobby shop with him. He's actually one of the most avid 1/8-scale racers in the country, so he decided to make a business of it.

the first day of qualifiers, a strong weather system moved in and doused many racers' chances of testing new setups.

During day two of qualifying, Whitley

**R/C
TEXAS
BLAST!**

bettered his time and twice broke into the 17-lap range. His car was dialed-in for speed. In 2WD, Cochran recaptured the top spot with a blazing 18-lap run to take TQ honors for the first time at a major event. Ball was still running well, and even I overcame the "new-car blues" to post a top-five run.

In 4WD, Swauger didn't look back as he drove his Picco Genesis out of the 19s and into the 20-lap range. Barrera tucked in behind him to take over the second spot from Blacketter, but they both bettered their previous times. Claudio Tamburri broke into the top 10, as did local drivers Chris Metheny, Ed Weatherby and Heinz Meyer; this made the 4WD crowd very competitive.

14 TEXAS

Almost annually, the Texas Biggie has been threatened by thunderstorms and foul weather, but in its 14-year history, the event has never been rained out. This luck may be due in part to the event's tribute to Memorial Day and MIA/POWs, or to some higher being watching over 1/8 scale, as many racers believe. Once again, stormy skies cleared as the racers prepared their cars for the Mains. Although qualifying uses the "IFMAR" start, the Mains use a conventional Le Mans start along the back straight. A lot can happen in a 30-minute Main and, unlike electric racing, the guy out in front after 1 minute isn't always the winner.

THE MAINS

The Concours was run prior to the Mains, and all that can be said is that Blacketter should definitely stick to racing. The Markster, Marko Von Market, Marko-rama...Mark put his "race body" on the line with some very nice-looking paint jobs, and surprised the rest of the team (and yours truly) by sneaking away with top honors. But, Blacketter is a gracious winner and a good sport; he probably won't let anybody forget it for at least three years!

It was obvious from the start of the Pan A-Main event that Bailey Whitley was in a class by himself. He never looked back. His custom "Charlie" car was hooked-up all weekend long. David Murray

surprised the crowd as he moved up from 5th position to hold 2nd place, and Toby Spinks settled into 3rd. The 30-minute race remained virtually the same until Murray lost his exhaust manifold with roughly 5 minutes remaining. This opened up the door for Spinks and Anderson, who were running a great race. Anderson put the pedal down and edged out Spinks for the 2nd spot at the end. But, nobody ever had a chance against Whitley, who finished the race with a 13-lap lead over the 2nd-place car.

In the 2WD A-Main event, Cochran showed that he was the driver to beat. He's typically very consistent on the track, and his quiet demeanor hides an unequivocal competitive nature. He does his talking with a race car, on the track. Cochran took the point and led a tight race for several minutes. Portfiorio and Tanniehill followed closely in pursuit. Several cars had problems early on. Jim Pierson dropped out after only eight laps, and Colin Jones was off the track after only five. Cochran and Tanniehill pitted first, while Portfiorio's BMT hit the pits for fuel one lap later. But, at the halfway mark, the leader-board was unchanged, except that Ball was making a strong charge through the ranks. The pace began to slow as tire wear and fatigue set in. Portfiorio and Tanniehill couldn't keep pace with Cochran as he steadily pulled away. Nearing the finish, Ball put some extremely low lap times together and moved into 2nd place. Portfiorio and Ball battled it out down to the wire, but the 2nd spot went to Ball with a 9-second lead over Portfiorio. Tanniehill held on for 4th.

At most major races, Swauger and his 4WD Picco usually play second fiddle to teammate Ralph Burch Jr., but Swauger was in the driver's seat in Texas. He grew up around racing (and boy has he grown up!).

(Continued on page 160)

Pan: A-Main

Fin.	Qual.	Driver	Car	Motor	Radio	Tires	Body
1	1	Bailey Whitley	Charlie	Nova Rossi	Futaba	UFRA	Lola
2	5	Jim Anderson	Associated	CMB	KO	GTS	Elfin
3	4	Toby Spinks	Scratch	Nova Rossi	Futaba	Arrows	Lola
4	6	Amanda Bottoms	Delta	Nova Rossi	Airtronics	GTS	Elfin
5	3	David Murray	Associated	Picco	Futaba	Gomme	Elfin
6	2	Rudy Williams	Charlie	P-5	Airtronics	GTS	Elfin
7	7	Leasha Burks	Charlie	Nova Rossi	Futaba	UFRA	Elfin
8	DNS	Robin Waller					
9	DNS	Michael McKey					

2WD: A-Main

Fin.	Qual.	Driver	Car	Motor	Radio	Tires	Body
1	1	Sean Cochran	Delta	OPS	KO	Delta	Elfin
2	4	Jeff Ball	Associated	REX	Futaba	Gomme	Elfin
3	2	Tommy Portfiorio	BMT	Nova Rossi	KO	Arrows	Lola
4	3	B.J. Tanniehill	Delta	REX	Airtronics	Gomme	Lola
5	6	George Flippin	Delta	Top	Kraft	Delta	Elfin
6	10	Sandro Tamburri	BMT	Top	Futaba	Arrows	Lola
7	9	Jim Pierson	Delta	Picco	Futaba	Delta	Lola
8	5	Jeff Bronstein	BMT	REX	Airtronics	Delta	Lola
9	8	Colin Jones	BMT	Nova Rossi	Futaba	Gomme	Lola
10	7	Gay Sullivan	Associated	Nova Rossi	Airtronics	Twinn-K	Elfin

4WD: A-Main

Fin.	Qual.	Driver	Car	Motor	Radio	Tires	Body
1	1	Mike Swauger	Picco	Picco	Airtronics	Gomme	Elfin
2	2	Scott Barrera	BMT	Top	Futaba	Arrows	Lola
3	8	Ed Weatherby	BMT	Nova Rossi	Airtronics	Arrows	Lola
4	3	Mark Blacketter	Picco	Picco	Airtronics	Gomme	Elfin
5	4	Claudio Tamburri	BMT	Top	Futaba	Arrows	Lola
6	9	Heinz Meyer	Serpent	P-5	Airtronics	GTS	Lola
7	10	Richard Summer	BMT	P-5	KO	Arrows	Lola
8	5	John Meyer	Serpent	P-5	KO	GTS	Lola
9	6	Rusty Husband	BMT	Nova Rossi	Kraft	Arrows	Lola
10	7	Chris Metheny	Picco	REX	Airtronics	Gomme	Elfin

Race Results



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Fleming's R/C Raceway, 169 Raceway Dr., Wellington, AL 36279; Phil Fleming, (205) 820-6269



"Lil" TST R/C Raceway, 32 St. N., Alabama City, AL 35904; (205) 547-0072



Main Street Raceway, 156 Main St., Trussville, AL 35173; Paul Spivey, (205) 655-3868



Oak Mountain Raceway & R/C Club, 2624 Janice Circle, Birmingham, AL 35235; Will Barrett, (205) 856-7051



Performance Hobby, 2600 A Beltline Rd., Decatur, AL 35603; Tom & Faye Rozycki, (205) 353-3399



Piedmont R/C Superspeedway, 41 Jewel Lane, Oxford, AL 36203; Terry Young or Greg Gaines, (205) 831-2986 or 831-1666



R&J's Raceway, County Rd. 236, Trinity, AL 35643; Rodney Porter, (205) 351-6259



R/C Hi-Tech Raceway, 3303 Meridian St., Huntsville, AL 35811; Rick Chambers, (205) 539-1347



Satellite Hobbies, 2799 Rose Rd., Albertville, AL 35950; Troy or Jerry Smith, (205) 878-2526



ALASKA

ARCORR, P.O. Box 221253, Anchorage, AK 99522-1253; Rick Ricker, (907) 248-7390



McKinley Hobby & Raceway, 2300 McKinley Dr., Wasilla, AK 99554; (907) 376-9351



Seth's Speedways, 3400 Hiland Dr., Anchorage, AK 99504; Seth Graham, (907) 337-3777



Southtown Hobby & Raceway, 12001 Industry Way #2, Anchorage, AK 99515; Bob or Vickie Peters, (907) 345-3131



ARIZONA

Economy One-Stop Raceway, 4000 S. 4 Ave., Yuma, AZ 85366; (602) 344-3514



Finish Line Raceway, 7025 E. 21st St., Tucson, AZ 85710; Jerry Kikkert, (602) 747-3633



G&S Raceway, 967 Hancock, Bullhead City, AZ 86442; Bob Olsen, (602) 758-1100



Havasut R/C Raceway, 1081 Desert View Dr., Lake Havasu City, AZ 86403; Bernie Coates, (602) 680-6304



Outlaw Raceway, 5309 Lakewood Rd., Ft. Mohave, AZ 86427; Frank Greely, (602) 768-5001



Overmyer's Speedrome, P.O. Box 541, Bullhead City, AZ 86430; Sarge Overmyer, (602) 758-2463



R/C Sports Mania, 3550 N. 35th Ave., Phoenix, AZ 85017; (602) 996-4668



Race Prep Raceway, 852 S. Hwy. 89, Chino Valley, AZ 86323; Mike Dunn, (602) 636-1955



Scale Racing Sports, 1120 N. Hayden Rd., Tempe, AZ 85281; Mike, (602) 829-9117



Sierra Vista Raceway, 105 N. Central Ave., Sierra Vista, AZ 85635; Wayne Tuthill Sr., (602) 459-1335



Speedway Hobbies, 1000 N. Humphreys St., #204, Flagstaff, AZ 86001; Gary McAllister, (602) 556-0710



ARKANSAS

AERCC, Vimy Ridge Rd., Little Rock, AR; (501) 945-7037



Arkansas Int'l. Superspeedway, P.O. Box 1636, Pine Bluff, AR 71613; Joe Pitts, (501) 247-2371



Ozark Hobby Shop, 702 S. 2nd, Rogers, AR 72756; Joe Talarski, (501) 631-6871



R-C Wheelz, 2630 Piko Ave., N. Little Rock, AR 72114; (501) 758-3330



CALIFORNIA

AppleTree Raceway, 1303 Hermosa Ave., Pacifica, CA 94044; Sonny Day, (415) 359-9755



ARO Hobbies Raceway, 24275 Sunnymead, Moreno Valley, CA 92553; George or Mike Kilen, (714) 924-3240



Bob & Jim's R/C World, 3485 University Ave., Riverside, CA 92501; Bob Parcell, (714) 684-6314



Brake-a-way Raceway, 3179 Hamner Ave., Norco, CA 91760; Debbie Burrie, (714) 736-6063



California Auto Racers (CAR), 96 San Tomas Aquino Rd., Campbell, CA 95008; Club Message Line, (415) 508-9971



City Speedway, 7750 Convo Ct., San Diego, CA 92111; (619) 560-9633



Cloverdale R/C Raceway, 1 Citrus Fair Dr., Cloverdale, CA 95425; Tom Kelley, (707) 586-9789



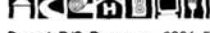
Covina Racing Company, 1611 W. San Bernardino Rd., Covina, CA 91722; Tom, (818) 331-4984



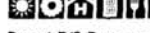
Cycle Art Raceway, 2211 N. Pleasant Way, Fresno, CA 93705; Richard De Benedictis, (209) 233-3665



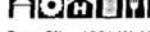
D&D Raceway, 290 S. First St., Turlock, CA 95380; Dave Miller, (209) 667-0970



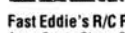
Desert R/C Raceway, 9231 E. Hobson Way, Blythe, CA 92225; Rodney Lazenby, (619) 922-5516



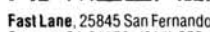
Desert R/C Raceway, 39360 3rd St. E., Ste. 305, Palmdale, CA 93550; (805) 272-1835



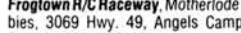
Drag City, 1361 W. Valley Blvd., Colton, CA 92324; Chris Gabriel, (714) 370-0580



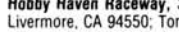
Fast Eddie's R/C Raceway, 3261 Edward Ave., Santa Clara, CA 95054; Eddie Affague, (408) 986-8256



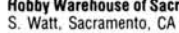
Fast Lane, 25845 San Fernando Rd., #21, Saugus, CA 91350; (805) 255-2404



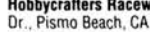
Frogtown R/C Raceway, Motherlode Hobbies, 3069 Hwy. 49, Angels Camp, CA 95222; (209) 736-4989



Hobby Haven Raceway, 3983 First St., Livermore, CA 94550; Tom Welding Jr., (510) 443-5828



Hobby Warehouse of Sacramento, 5600 S. Watt, Sacramento, CA 95828; Roger Hubbard, (916) 381-7588



Hobbycrafters Raceway, 323 Five Cities Dr., Pismo Beach, CA 93449; (805) 773-6765



Jackman's R/C Raceway, 1616 N. Beale Rd., Marysville, CA 95901; Bonnie or Harry Jackman, (916) 741-3744



K&M R/C Raceway, 22474 A Barton Rd., Grand Terrace, CA 92324; Mike Blake, (714) 783-0899



Lindsey's R/C Raceway, P.O. Box 443, Doyle, CA 96109; (916) 827-2457



Lucerne Valley Raceway, 32800 #4 Old Woman Springs, Lucerne Valley, CA 92356; Frank Rodrigue, (619) 248-7305



M'n'M Hobbies, 710 E. Parkridge, Corona, CA 91719; Don Hughes, (714) 272-3545



Merced R/C Auto Racers (MRCAR), 1652 W. North Bearcreek Dr., Merced, CA 95348; Ed Lopez, (209) 725-8040



One-Stop Raceway, 3782 Cerritos Ave., Los Alamitos, CA 90720; (213) 493-7597



Outlaw R/C Hobbies, 7920 Webster, San Bernardino-Highland, CA 92346; Rick James or Paul Nadeau, (714) 864-1770



Paso Robles R/C, P.O. Box 3795 (3980 Linne Rd.), Paso Robles, CA 93447; (805) 237-0624



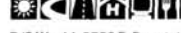
R/C City Raceway & Hobbies, 1453 N. Milpitas Blvd., Milpitas, CA 95035; Tom & Bonnie Grader, (408) 262-3188



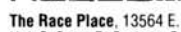
R/C Racing Center, 9842 Channel Rd., Lakeside, CA 92040; Russ or Cindy, (619) 443-2270



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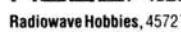
R/C World, 5759 E. Fountain Way, Fresno, CA 93727; Brian Gaynor, (209) 348-9409



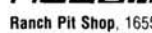
The Race Place, 13564 E. Imperial Hwy., Unit G, Santa Fe Springs, CA 90670; (213) 926-7711



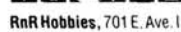
Radio-Controlled Hobbies, 2011 Placentia Ave., Costa Mesa, CA 92630; (714) 631-1555



Radiowave Hobbies, 4572 Telephone Rd., Ventura, CA 93003; Al Young, (805) 642-0390



Ranch Pit Shop, 1655 E. Mission Blvd., Pomona, CA 91766; Billy Bowlerman, (714) 623-1506



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Roy's Raceway, 368 E. 11th St., Tracy, CA 95516; (209) 836-3513



San Diego R/C Car Club, P.O. Box 232456, San Diego, CA 92193; (619) 560-0089



Square Roundhouse R/C Speedway, 1468 Lander Ave., Turlock, CA 95380; (209) 668-4454



SRS Raceway, 915 N. Main St., Salinas, CA 93906; (408) 424-4044



Tyler's RC/RD Racing Center, 6865 Flanders #D, San Diego, CA 92121; (619) 597-3072



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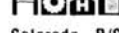


Yorba Linda R/C Speedway, 3780 Prospect #B, Yorba Linda, CA 92685; David Landier, (714) 572-2175



COLORADO

Action R/C Raceway, 4939 N. Broadway #57, Boulder, CO 80304; (303) 440-0330



Colorado R/C Speedway, 6520 Wadsworth Blvd. #130, Arvada, CO 80003; (303) 425-1718</

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R/C World & Track, 2788 S. Federal Blvd., Denver, CO 80236; (303) 789-0838



Rocky Mountain R/C Raceway, 625 Ford St., Unit B, Colorado Springs, CO 80915; Blaine Schubarth, Randy Joslin, (719) 550-1777



CONNECTICUT

Connecticut R/C Off-Roaders, Old Field School, Mona Terrace, Fairfield, CT 06430; Mike Belmonte (203) 661-0145



East Hartford R/C Speedway, 52 Village St., East Hartford, CT 06108; Bob Matulis, (203) 528-8566



High-Tech Raceway, 374 Enfield St., Enfield, CT 06082; (203) 745-8488



Hobby World Raceways, 161-6 Woodford Ave., Plainville, CT 06062; (203) 793-1111



JP's Hobbies & Track, 54 Wakelee St. Ext., Seymour, CT 06483; (800) 547-5772



K/N R/C Speedway Inc., West St., Stafford Springs, CT 06076; (203) 684-9896



NERCAR, 36 Glendale Rd., Enfield, CT 06082; Phil Olsson, (203) 627-5410



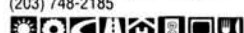
R/C Madness, 640 Enfield St., P.O. Box 64, Enfield, CT 06082; Christopher Marcy, (203) 741-6501



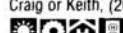
R/C Raceways Inc., 1265 John Fitch Blvd., South Windsor, CT 06074; (203) 528-3661



R/C World/Sugar Hollow Speedway, 66 Sugar Hollow Rd., Danbury, CT 06810; (203) 748-2185



SCORA/Clayton's Off-Road Racing, 141A Middletown Ave., North Haven, CT 06473; Craig or Keith, (203) 234-CLAY



Tec Tron's R/C Stadium, 52 Village St., E. Hartford, 06108; (203) 289-8119



Wallingford Indoor Racing, 63 N. Cherry St., Wallingford, CT 06492; (203) 265-3939



DELAWARE

T.N.T. Hobbies & Raceway, P.O. Box 464, 609 Stein Hwy., Seaford, DE 19973-0464; Thorpe Shatney, (302) 628-0520



FLORIDA

B+T R/C Central, 811 Playground Rd., Ft. Walton Beach, FL 32547; (904) 863-2666



Barry's R/C Raceway, 2701 SW College Rd. #603, Ocala, FL 32674; Barry Lees, (904) 237-4400



Branford R/C Speedway, Rt. 3, Box 240, Branford, FL 32008; (904) 935-0758



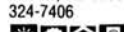
Continental Racing, 5335 N. Military Trail, West Palm Beach, FL 33407; (409) 697-5167



Coral Springs Roadrunners, P.O. Box 9632, Coral Springs, FL 33075; Tom Allison, (305) 721-0344 or Rick Schwartz, (305) 344-1983



5-fifty-5 Raceway, County Rd. 555, Bartow, FL 33830; Chuck Nolke, (813) 324-7406



First Coast International Speedway, P.O. Box 1342, Jacksonville, FL 32201-1342; Bob Thompson, (904) 743-2161



Ft. Lauderdale R/C Speedway, 2201 NW 9th Ave., Mills Pond Park, Ft. Lauderdale, FL 33308; Jack Koons, (305) 424-6617



Greater Orlando Auto Racers, 970 Keller Rd., Altamonte Springs, FL 32714; Dave Mottin, (407) 293-7090



H&H Raceway, 4121 S. Tamiami Tr., Sarasota, FL 34231; (813) 922-7711



Hialeah Hobby Raceway, 4562 W. 12 Ave., Hialeah, FL 33015; (305) 826-3702



JARCAR Raceway, 7273 103rd St., Jacksonville, FL; Rob Kruse, (904) 272-6315



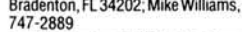
Lake Whipoorwill International Speedway, 12345 Narcoossee Rd., Orlando, FL 32827; Bob Hosch, (407) 277-9586; fax (904) 759-3993



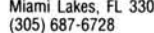
Lou's R/C Hobbies & Raceway, 1512 SE Village Green Dr., Port St. Lucie, FL 34952; (407) 337-9000



M&M R/C Raceway, 16921 Waterline Rd., Bradenton, FL 34202; Mike Williams, (813) 747-2889



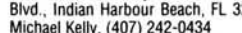
Miami Speedway, 7805 NW 148th St., Miami Lakes, FL 33014; Julio Romero, (305) 687-6728



Ocala R/C Car Club, P.O. Box 70166, Ocala, FL 32670; Larry E. Mitchell, (904) 245-2609; Steve Shook, (904) 694-5147



Oceanside Raceway, 206 E. Eau Gallie Blvd., Indian Harbour Beach, FL 32937; Michael Kelly, (407) 242-0434



Palm Beach Electric Off-Road Racers, Willows Park, Royal Palm Beach, FL 33406; Mark (407) 790-6917; Walt, (407) 965-2790



PBG R/C Motorpark, 4399 Lilac St., Palm Beach Gardens, FL 33410; Doug Gleason, (407) 624-9252



Pro Hobbies Speedway, 715 N. Lake Pleasant Rd., Apopka, FL 32712; (407) 886-4615



R/C Action, 646 Choy Lee Circle, Orlando, FL 32708; (407) 695-6746



Raceway Hobbies, 1115-J Enterprise Ct., Holly Hill, FL 32117; (904) 258-7537



Ray's Track & Hobby, 4605 W. Cayuga St., Tampa, FL 33614; (813) 872-8662



Rental Raceway, 3655 S. Hopkins Ave., Titusville, FL 32780; (407) 383-0631



River City R/C Car Club, 9711 Sharing Cross Dr., Jacksonville, FL 32257; Bill Fraden, (904) 268-1948



St. Augustine R/C Speedway, 99 Masters Dr., St. Augustine, FL 32095; (904) 824-6357



Space Coast Raceway, 563 Barton Blvd., #17, Rockledge, FL 32955; Bill Pinch, (405) 631-4373



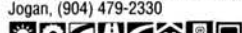
Sun Valley Speedway, Palmer Blvd., Sarasota, FL 34232; (813) 322-1200; (mailing address: Rt. 1, Box 443N, Myakka City, FL 34251)



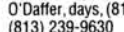
Three Flags R/C Racetrack, Rt. 2, Box 48-A, Wildwood, FL 34785; Don Meares, (904) 748-3870



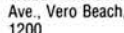
TJ's R/C Raceway & Hobby Shop, 1010 Creighton Rd., Pensacola, FL 32504; John Jogan, (904) 479-2330



West Coast R/C Club, Lake Park, 17203 N. Dale Marry, Tampa, FL 33549; Tim O'Daffer, days, (813) 969-3683; evenings, (813) 239-9630



Wilbur Avenue Raceway, 1848 Wilbur Ave., Vero Beach, FL 32960; (407) 567-1200



GEORGIA

Carnesville R/C Speedway, Rt. 2, Box 2354, Carnesville, GA 30521; Bobby Maxwell or Byron Sartain, (404) 384-4870 or 384-4587



Case R/C Raceway, P.O. Box 1061, Trenton, GA 30752; (404) 657-6789



Dalton Raceway, 2300 Chattanooga Rd., Dalton, GA 30720; (404) 226-6699



Georgia Hobby Center, 112 Kenwood Rd., Fayetteville, GA 30214; (404) 460-1753



Good Life City Raceway, 6606 Newton Rd., Albany, GA 31707; (912) 888-2515



Lake Mayer Raceway, 1 Melinda, Savannah, GA 31460; Phil Hurd, (912) 355-6033



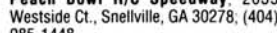
Middle GA Slot Car, 1805A Watson Blvd., Warner Robins, GA 31088; Larry Tucker, (912) 922-RACE



PDQ Raceway & Hobbies, 341 Senoia Rd., Peachtree City, GA 30269; Richard Burdett, (404) 631-1788



Peach Bowl R/C Speedway, 2035 Westside Ct., Snellville, GA 30278; (404) 985-1448



The Racer's Edge, 1530 Hwy. 19 North, Thomaston, GA 30286; Mark or Roger Walls, (404) 648-6534



Sandy Cross Speedway, Rt. 1, Box 1073, Royston, GA 30662; Morris Phillips or Wayne Fowler, (404) 245-9573



Silver Wings Raceway, 5611 Riverdale Rd., College Park, GA 30349; (404) 991-2225



Sugar Bowl R/C Speedway, 5272 North Ave., Sugar Hill, GA 30518; Shelley or Jan Bailey, (404) 945-6709



HAWAII

Hobby Habit, 70 Kaahumanu Ave., Kahului, Maui, HI 96732; Blaine or Teri, (808) 871-6666



K/M's Hobbies, 2305 Jasmine St., Honolulu, HI 76816; George Mirikiana, (808) 757-7135

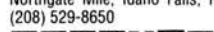


Team PRC Racing Club, Pahoa Government Rd., Pahoa, HI 96778; Charlie Kawamoto, (808) 965-8216



IDAHO

Falls Hobbies & R/C Raceway, 1515 Northgate Mile, Idaho Falls, ID 83401; (208) 529-8650



ILLINOIS

Adam's Blast Track, RR 1, Box 370, Ashmore, IL 61912; John Deffenbaugh, (217) 349-8447



Ameri-Trac, R3, Box 242, Mattoon, IL 61938; (217) 234-8707



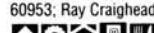
Badlands II, 320 W. Jackson St., Vandalia, IL 62471; (618) 283-2913



BARR, 809 River Dr., Byron, IL 61010; Jim Haynes, (815) 234-5615



C&R Hobbies, 39 E. Jones, Milford, IL 60953; Ray Craighead, (815) 889-4073



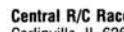
Centennial Park/LeMont Dirt Burners, 7827 Rohrer Dr., Downers Grove, IL 60516; Scott Moravik, (708) 968-6411



Central Illinois R/C Car Club, contact Ron Buhl, 109 Oliver N., Pekin IL 61554; (309) 382-2591 or Randy House, 510 S. 10th, Pekin, IL 61554; (309) 347-4912



Central R/C Raceway, RR 2, Box 51-A, Carlisle, IL 62626; Tim Stewart, (217) 854-9718 or Don Rice, (217) 854-3785



Diehard R/C Raceway, 300 N. Main, Kewanee, IL 61443; Dick Jennings, (309) 852-3700



Eagle Speedway, 303 N. Plum, Pontiac, IL 61764; Joe or Vickie Bachman, (815) 842-1738



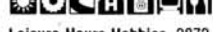
Hobby Town Raceway, 4611 W. Rt. 120, McHenry, IL 60050; Mike Hollingsworth (815) 344-1777



JC Hobbies/Metro Motor Speedway, Metropolitan Airport, Metropolis, IL 62960; (618) 524-9979



JMP Raceway, 952 Harrison Ave., Wood River, IL 62095; (618) 258-0297 or -0282



Leisure Hours Hobbies, 2872 Plainfield Rd., Joliet, IL 60435; (815) 439-1477



Lisle Community Park Raceway, 1825 Short St., Lisle, IL 60532; Jim Bernicky, (708) 416-6944



Machesney Park, 1220 Shappert Dr., Machesney Park, IL 61111; (815) 282-1311



Magnum R/C Speedway, RR #2, Box 399, Danville, IL 61832; Terry & Nancy Dines, (217) 446-2472



Marty's R/C Hobby, 1335 E. Broadway, Bradley, IL 60915; Gail or Marty, (815) 933-8441



Midwest Hobby Trax, 114 Kirkland Cr., Unit A, Oswego, IL 60543; Duane Pierson or John Koonce, (708) 978-RACE



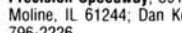
Monroe R/C Raceway, 26049 Ridgeland Ave., Monee, IL 60449; (708) 534-2422



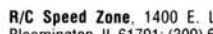
Peoria R/C Raceway, 518 Hillsdale Ave., Peoria, IL 61604; Ray Tighe, (309) 672-1780



Precision Speedway, 3919 17 St., East Moline, IL 61244; Dan Kennedy, (309) 796-2226



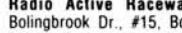
R/C Speed Zone, 1400 E. Lafayette, Bloomington, IL 61701; (309) 662-RACE



The R/C Track, 15022 S. Artesian, Harvey, IL 60426; Edmund Johnson, (708) 331-4079



Radio Active Raceways, 751 N. Bolingbrook Dr., #15, Bolingbrook, IL 60440; Jim or Lenny, (708) 759-7557



Redline Raceway, 921 Harding, Calumet City, IL 60409; (708) 862-8181



Rick's R/C Raceway, 122 W. 12th St., Streator, IL 61364; Rick Wallace, (815) 673-1870



Riverview Raceway, 2550 W. Addison, Chicago, IL 60618; Michael Cardenas, (312) 583-1902



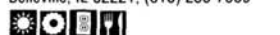
SIRCAR Raceway, 1200 N. Marion, Carbondale, IL 62901; (618) 549-5885



Slot Wing Hobbies Race Place, 1615 W. Springfield, Champaign, IL 61821; (217) 359-1920



Smithton Community Park, P.O. Box 8152, Belleville, IL 62221; (618) 236-7569



Superior Raceway, 1706 W. Bradley, Champaign, IL 61821; (217) 359-8073



Thunderroad Speedway, Intersection of Broadway and Division, Coal City, IL 60416; (815) 634-2540



TQ Hobbies & Raceway, 13710 Wicker Ave. (Rt. 41), Cedar Lake, IL 60303; Jack Wilson, (219) 374-9776



Valley Farms R/C Raceway, 706 Bypass 20, Cherry Valley, IL 61016; (815) 332-4516



INDIANA

Autograph/Race World, 721 Pendleton Ave., Pendleton, IN 46064; Sam Mudd, (317) 778-3386



BJ's Riverside Raceway, 265 S. Clay St., Jasper, IN 47546; Joe Lorey, (812) 482-3484



Blaze'n Race'n, P.O. Box 6, Hamlet, IN 46532; James Berndt, (219) 867-1324



Boone County R/C Track, 1300 E. 100 S. Rd., Lebanon, IN 46052; Jerri Moss, (317) 293-2225



CC Hobby & Speedway, RR 1, Box 68, Francesville, IN 47946; (219) 567-2447



Classic Hobbies, 420 E. Commercial, Lowell, IN 46356; David Scheffler, (219) 696-0649



County Line R/C, 2333 W. State Rd. 38, Sheridan, IN 46069; Greg Welch, (317) 758-6393



Gonzo Raceway, 418 Roberts Rd., Chesteron, IN 46304; (219) 980-8409



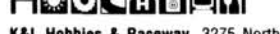
Hobby Barn Raceway, 1950 Springhill, Terre Haute, IN 47802-9694; (812) 299-5773



The Hobby Prescription, 115 S. Indiana Ave., Auburn, IN 46706; Roxanne Fike, (219) 925-6699



Hobby World Raceway & Hobbies, 1508 N. Harlan, Evansville, IN 47711; Jeff Wassman, (812) 421-1100



K&L Hobbies & Raceway, 3275 North 525W, LaPorte, IN 46350; (219) 324-0353



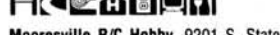
Main Hobbies, 625 Columbia, Lafayette, IN 47901; Randy Palmer, (317) 742-2045



Master Hobbies, 8501 Bash Rd., Indianapolis, IN 46250; Tim or Dan, (317) 576-1961



Mooreville R/C Hobby, 7 Moore St., Mooreville, IN 46158; (317) 831-8877



Mooreville R/C Hobby, 9201 S. State Rd. 67, Camby, IN 46113; (317) 831-8877



P&T Hobbies and Raceway, RR 2 (Hwy 60), Mitchell, IN 47446; Paul Weber, Tom Logsdon, (812) 849-6666; fax, (812) 332-0018



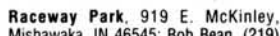
R/C Barn, 310 N. 125 W., Monroe, IN 46772; Mark Lengerich, (219) 692-6600



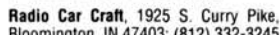
R/C World of Indiana, RR #2, Box 335, Lynn, IN 47355; (317) 874-2464



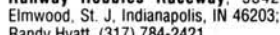
Race St. Raceway & Hobby, 1126 1/2 Race St., New Castle, IN 47362; John or Nancy Strong, (317) 521-4888



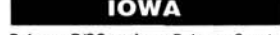
Raceway Park, 919 E. McKinley, Mishawaka, IN 46545; Bob Bean, (219) 256-1020



Radio Car Craft, 1925 S. Curry Pike, Bloomington, IN 47403; (812) 332-3245



Runway Hobbies Raceway, 5342 Elmwood, St. J., Indianapolis, IN 46203; Randy Hyatt, (317) 784-2421

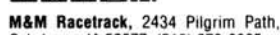


IOWA

Dubuque R/C Speedway, Dubuque County Fairgrounds, Dubuque, IA 52001; Paul Conlon, (319) 556-2736



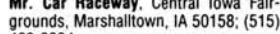
Kodiak Race Track, Box 78, Okoboji, IA 51355; Brad or Dave, (712) 332-7982



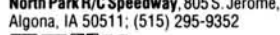
M&M Racetrack, 2434 Pilgrim Path, Oskaloosa, IA 52577; (515) 673-6265



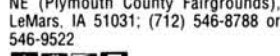
Marble's Hobby Supply, 4685 SE 40th St., Des Moines, IA 50320; Rick Marble, (515) 262-7507



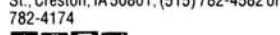
Mr. Car Raceway, Central Iowa Fairgrounds, Marshalltown, IA 50158; (515) 483-2234



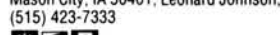
North Park R/C Speedway, 805 S. Jerome, Algona, IA 50511; (515) 295-9352



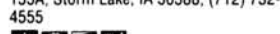
Plymouth County R/C Speedway, 4th Ave. NE (Plymouth County Fairgrounds), LeMars, IA 51031; (712) 546-8788 or 546-9522



Power House Racing, 1200 S. Division St., Creston, IA 50801; (515) 782-4582 or 782-4174



River City R/C Speedway, 317 2nd NW, Mason City, IA 50401; Leonard Johnson, (515) 423-7333



Rotunda Raceway, 101 Bass, RR 1, Box 155A, Storm Lake, IA 50588; (712) 732-4555



Sibley Raceway, Osceola County Fairgrounds, Sibley, IA 51249; Al Reck (712) 754-2604 (day) or 754-3613 (night)



Southwest Iowa R/C Raceway, Kelly Park, Red Oak, IA 51566; (712) 623-5513



Southwest Iowa R/C Raceway, Montgomery County Fairgrounds, Red Oak, IA 51566; (712) 623-5513



Team Hypersonic Raceway, 23075 Coffee Hill Rd., Holy Cross, IA 52053; Dave Lukaski, (319) 870-4665



Team Johnson Speedway, Jct. Hwy. 34 & 406, West Burlington, IA 52655; (319) 753-0753



KANSAS

ACE Raceway, 325 Commercial, Emporia, KS 66801; Luke Amend, (316) 343-1933



Chad's R/C World & Raceway, 217 Brownie Ave., P.O. Box 76, Scranton, KS 66537; (913) 793-2313



Ebersole R/C Superspeedway, 11417 W. Hwy. 54, Wichita, KS 67209; Len Ebersole, (316) 722-8888



Pittsburg International Mini Speedway, 511 1/2 N. Locust, Pittsburg, KS 66762; (316) 232-1973



R/C Superdome & TQ Pro Shop, 14 E. Ave. A, Hutchinson, KS 67501; (316) 665-6633



RCRC Raceway, 507 N. 4th, Atwood, KS 67730; Bob Dunker, (913) 626-3261



Shawnee Hobby & R/C Raceway, 4603 Shawnee Dr., Kansas City, KS 66106; Bill Pugh, (913) 384-3211



KENTUCKY

A&J Raceway, Hc-64, Box 322-A, Lily, KY 40740; Al Smith, (606) 523-9710



Bluegrass Int'l/Perry's R/C Hobbies, 214 Globe St., Radcliff, KY 40160; William Perry, (502) 351-RACE



East Kentucky Hobby Raceway, Hwy. 15, Garner Mt., Isom, KY 41824; (606) 633-8567



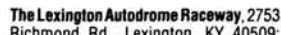
Fast Lane Hobbies & Raceway, 281 Porter Pike, Bowling Green, KY 42101; Greg Bailey, (502) 782-2419



Hobby Center Inc., 2106 Triplett St., Owensboro, KY 42303; Bobby Howell, (502) 683-7611



Hobbys Plus, 819 Main St., Hazard, KY 41701; Joe Mavaro, (606) 436-3175



The Lexington Autodrome Raceway, 2753 Richmond Rd., Lexington, KY 40509; (606) 269-7794



Lexington Model Shop Raceway, 211 New Circle Rd., Lexington, KY 40505; Billy Dent, (606) 293-2951



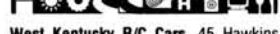
Pro-Trak R/C Racing, 3451 Cane Run Rd., Louisville, KY 40211; Les Wurzel, (502) 239-4307



Remote-Control Hobby Shop/Raceways, Rt. 8, Box 211, Mayfield, KY 42066; (502) 247-4715



River Cities Raceworld, 1104 Powell Ln., Flatwoods, KY 41139; (606) 836-CARS



West Kentucky R/C Cars, 45 Hawkins Loop, Symsonia, KY 42082; (502) 851-3534



LOUISIANA

Acadiana R/C Hobbies & Raceway, 120 Toledo Dr., Lafayette, LA 70506; (318) 235-5825



Cajun R/C Raceway, Rt. 2, Box 288 (Hwy. 343, Bosco) Church Point, LA 70525; Ray Thibodeaux, (318) 873-3855



Cajun R/C Raceway, 110 A Darbonne, Sulphur, LA 70663; Sandy Thibodeaux, (318) 527-9129



Johnny V's R/C Hobby & Raceway, 1036 W. Airline Hwy., LaPlace, LA 70668; Johnny V or Shawn Adams, (504) 651-9045



Loupe's R/C, 888A Madeline Ct., Baton Rouge, LA 70815; Mark Loupe, (504) 927-6275



Oakdale Raceway, 1259 Hwy. 165 S., Oakdale, LA 71463; M.L. Jeziorski, (318) 335-3532



Performance Hobby Raceway, 9135 W. Judge Perez Dr., Chalmette, LA 70044; Guy Trentecosta, (504) 271-2468



MAINE

Central Maine R/C Speedway, 18 Lithgow St., Winslow, ME 04901; David Prescott, (207) 877-2232



Clay Bowl R/C Hobbies, P.O. Box 61, Greene, ME 04236; Pat Cap, (207) 946-5003



Fun Time R/C Raceway, 508 Riverside St., Portland, ME 04106; Brian Cummings, (207) 878-3129



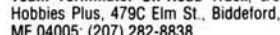
Mementos Hobby Shop, 86 Sweden St., Caribou, ME 04736; (207) 498-3711



Rocket R/C Hobbies, Annabessacook Rd., Winthrop, ME 04364; (207) 377-6910



Sanford Speedway, 479C Elm St., Biddeford, ME 04005; (207) 282-8838



Team Terminator Off-Road

Track Directory

Centerline Hobbies, 167 Corporation Rd., Hyannis, MA 02601; (508) 771-1244



CKS Raceway, 46 Wilbraham St., Palmer, MA 01069; (413) 283-2260



Julio's Hobby & Speedway, 825 Main St. (Rt. 109) Milis, MA 02054; (508) 376-1933



Megadrome Raceway, N. Adams Plaza, Rt. 8, North Adams, MA 01247; (413) 743-7223



Mike's Speedway, Rt. 9, Mt. Farms Mall, Hadley, MA 01035



Nagog Raceway, 401 Nagog Square, Acton, MA 01720; Lou Thomas, (508) 264-0087



Naytrix Raceway, Holmes Rd., Pittsfield, MA 01201; Rick Welch or Nate Zuckerman (413) 443-2488 or 443-9886



R/C Hobbies & Speedway, 1311 Purchase St., New Bedford, MA 02740; (508) 991-5040



R/C Hobbies & Speedway, 562B Reed Rd., N. Dartmouth, MA 02747; Rick Morrisseau or Dave Alfonso, (508) 991-5040



R/C World Raceway, 100 Crawford St., Leominster, MA 01453; Dan, (508) 537-9733



West St. Hobbies, 114C Main St., Medway, MA 02053; (508) 533-1231



MICHIGAN

Baja Bayou Off-Road Raceway, 5313 W 22 Mile Rd., Tustin, MI 49688; (616) 829-3447



Can-Am Hobbies Speedway Park, 1148 Gratiot, Marysville, MI 48040; (313) 364-3338



Central Michigan R/C Raceway, 1270 James Savage, Midland, MI 48640; Mark Siebert, (517) 631-1488



Cereal City R/C Off-Roaders, 2000 E. Columbia Ave., Battle Creek, MI 49015; (616) 963-2506



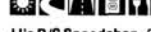
D-N-R Speedways, 4630 Hill Rd., Harbor Beach, MI 48441; Kelcey, (517) 479-6097



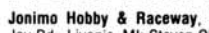
Dirt Slingers Raceway, 2460 Edwards, 2460 S. M139, Benton Harbor, MI 49022; Tom Edwards, (616) 927-1431



Fun Tyme High Banked Oval, Fun Tyme Adventure Park, 6295 E. Saginaw Hwy., Grand Ledge, MI 48837; (517) 655-5503



JJ's R/C Speedshop, 5645 E. 13 Mile Rd., Warren, MI 48092; (313) 977-0420



Jonimo Hobby & Raceway, 27788-90 Joy Rd., Livonia, MI; Steven Ollar, (313) 422-1830



JT Superspeedway, 825 Golden Ave., Battle Creek, MI 49017; Jerry or Dan, (616) 965-0571



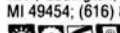
Larry's Performance R/C's, 3430 Highland Rd., Waterford, MI 48328; Larry Rossi, (313) 683-5529



Ludington R/C Raceway, 1483 N. Dennis Rd., Ludington, MI 49431; (616) 843-4654



Mason County R/C Car Track, West Shore Community College, (611 N. Washington Ave., Ludington, MI 49431) Scottsville, MI 49454; (616) 843-8553 or 843-4837



Mikey's Raceway, 7 North St., Yale, MI 48097; Mike Huber, (313) 387-4308



More R/C Club, 33538 23 Mile Rd., Chesterfield Township, MI 48047; (313) 773-5918 (Tom Kelly) or 749-9774 (Joe)



NMRCC Raceway, 110 N. Ostego, Gaylord, MI 49735; Ed Schneider, (517) 732-3963



Pointe R/C, 2119 Summerton Rd., Mt. Pleasant, MI 48858; Frank, (517) 773-5711



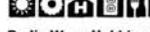
R&L Hobbies, 10334 Portage Rd., Portage, MI 49002; (616) 323-3686



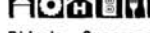
R&S Hobbies & Raceway, 230 Mill St., St. Louis, MI 48801; Rich Beard or Scott Davis, (517) 681-3463



Rad & Bad Raceway, 810 S. Martin Rd., Gladwin, MI 48624; Mick Bushong, (517) 426-4373



Radio Wave Hobbies, 14000 Old 14 Mile Rd., Greenville, MI 48838; (616) 754-2170



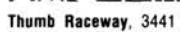
Rider's Superspeedway, 42040 Koppernick, Ste. 400, Canton, MI 48187; Brent Martin, (313) 451-5599



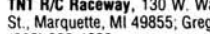
Rider's Superspeedway, 4415 S. Westledge, Kalamazoo, MI 49008; Ken Penn (616) 349-2666



T/A Raceway, 119 N. Michigan, Big Rapids, MI 49307; (616) 796-3217



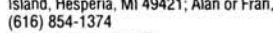
Thumb Raceway, 3441 S. Main St., Marlette, MI 48453; (517) 635-7848



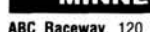
TNT R/C Raceway, 130 W. Washington St., Marquette, MI 49855; Gregory Berg, (906) 228-4098



USA Raceways, 6803 Dixie Hwy., Bridgeport, MI 48722; (517) 777-7054



Village Hobbies-n-Crafts, 17824 N. Maple Island, Hesperia, MI 49421; Alan or Fran, (616) 854-1374



MINNESOTA

ABC Raceway, 120 2nd St. NW, Pipestone, MN 56164; Ross Lange, (507) 825-5065



C&S Speedway, 312 N. Broadway, Crookston, MN 56716; (218) 281-6665



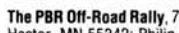
Greater Minnesota Racine Place, 3302 Southway Dr., St. Cloud, MN 56301; Jon Jackson, (612) 252-9768



Mac's Models, 80 E. Little Canada Rd., Little Canada, MN 55117; Dean Nelson, (612) 482-7796



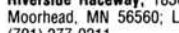
Minn-E-Golf & Hobby, 9100 Park Ave., Elk River, MN 55330; (612) 441-8365



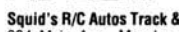
The PBR Off-Road Rally, 721 Cedar Ave., Hector, MN 55342; Philip Zempel, (812) 848-2129



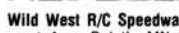
Range Racing World, Inc., 412 Jones St., Eveleth, MN 55734; Bill, (218) 744-4423



Riverside Raceway, 1830 23rd St. S., Moorhead, MN 56560; Les Sackreiter, (701) 277-0211



Squid's R/C Autos Track & Hobby Store, 924 Main Ave., Moorhead, MN 58102; Jeff Greenwell, (218) 233-3554



Wild West R/C Speedway, 2822 Piedmont Ave., Duluth, MN 55811; Roger Deloach, (218) 727-6248



MISSISSIPPI

Crossroads Raceway, Mall of Corinth, Rt. 1, Box 1, Corinth, MS 38834; (601) 287-2110



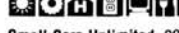
Dixieland R/C Speedway, 2535 Tabernacle Rd., Columbus, MS 39702; Jeffrey Avey, (601) 328-9429



Fast Freddy's Raceway, 20390 Hwy. 49, Saucier, MS 39574; Mark Payne, (601) 832-0315



Norm's R/C Hobbies, 310 E. Beach Blvd., Long Beach, MS 39560; (601) 863-0524



Small Cars Unlimited, 820 Cooper Rd., Jackson, MS 39212; (601) 372-FAST



Up Front Racing, 649 Norris St., Greenville, MS 38701; Trey Bordonon, (601) 334-9411 or 378-9201



MISSOURI

All Seasons Hobby, 152 O'Fallon Plaza, O'Fallon, MO 63366; Bob Daniels, (314) 281-8767



Doug's Hobbies, 5221 Veil of Tears, Jefferson City, MO 65109; (314) 893-5861



Gateway R/C Track & Hobbies, 255 Marshall Rd., P.O. Box 345, Valley Park, MO 63088; (314) 225-5844



Harrisonville Hobby Shop & Raceway, 2301 S. Commercial, Harrisonville, MO 64701; Richard Taylor, (816) 887-3055



Lafayette Riverside Raceway, P.O. Box 9663, Marshall Rd., Kirkwood, MO 63122; Don Laningham, (314) 966-8912



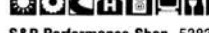
Outback Speedway & Hobby, 2810 Sutton Blvd., Maplewood, MO 63143; (314) 644-3383



Pevely R/C Raceway, 2199 Meadow, Barhart, MO 63012; Jerry Benz, (314) 464-8627



R+ Hobby, 590 Jungemann Rd., St. Peters, MO 63376; (314) 928-9838



S&P Performance Shop, 5383 Highway "N," St. Charles, MO 63304; Paul Lund, (314) 447-5252

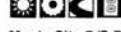


MONTANA

Bozeman R/C Powerhouse Track, west side of the Main Mall, Bozeman, MT 59715; (406) 586-6461



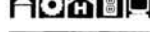
Garden City Raceway, 6725 Hwy. 10 W., Missoula, MT 59802; (406) 721-5405



Magic City R/C Raceway, 14th St. W. & Central Ave., Billings, MT 59101; (406) 259-9004



Pockets Raceway, Montana State Fairgrounds, Great Falls, MT 59405; Greg Vetter, (406) 761-7279



NEBRASKA

Hobby Town USA, 3404 W. 13th St., Grand Island, NE 68801; Ed Conroy, (308) 382-3451



Over the Wall Gang, Higiroad Speedway, 401 Market Pl., Norfolk, NE 68701; Matt Moeller, (402) 379-0879



Riverside R/C Raceway, Hwy. 77 S., Fremont, NE 68025; Mike Katz, (402) 721-3952



The Salvation Army, 4032 Harrison St., Omaha, NE 68147-1012; Lt. Michael Delashmit, (402) 634-3414



NEVADA

AMS R/C Raceway, 1130 Icehouse Ave., Sparks, NV 89431; Arnold Wratschko, (702) 355-8803; fax, (702) 825-4052



Little City Hobbies Raceway, 640 Kuenzli, Reno, NV 89503; shop, (702) 786-3611 or Bill Avery, (702) 358-7629

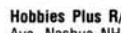


NEW HAMPSHIRE

C.T. Hobbies R/C Raceway, 49 Eaton Rd., Auburn, NH 03032; (603) 483-2274



4-K Racing, 100 Warwick Rd., Winchester, NH 03470; (603) 239-6207



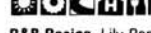
Hobbies Plus R/C Raceway, 14 Celina Ave., Nashua, NH 03063; (603) 882-9200



Hobby Etc., Heritage Place, Rt. 101A, Amherst, NH 03031; (603) 595-8549



NE Hobbies R/C Raceway, 49 Eaton Hill Rd., Auburn, NH 03032; Chuck Theriault, (603) 483-2274



R&B Racing, Lily Pond Rd., Gilford, NH 03246; Louie, (603) 524-2909 or Bud (603) 524-1893



R/C Racing Connection, P.O. Box 905, Ashland, NH 03217; Mike Bridges or Barry Lassiter, (603) 968-9663



Robert's Railroad & Hobbies, Box 431, Rt. 4 at Rt. 152, Northwood, NH 03261; Robert Jeffers, (603) 942-5193



NEW JERSEY

Action Raceway & Hobby Center, Rt. 295 & Harmony Rd., Gibbstown, NJ 08027; (609) 428-8933



Dave Bicknell Memorial Raceway, P.O. Box 914, Absecon, NJ 08201; Rob Caruso, (609) 428-8933



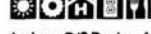
Family Hobbies, Northwst & Weymouth Rd., Vineland, NJ 08360; Ziggy Tepper, (609) 748-8677



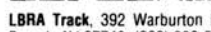
Glassboro's Grand Oval Speedway, 167 S. Delsea Dr., Glassboro, NJ 08028; (609) 863-1551



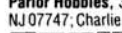
Golden Hobbies & Crafts, 415A Erial Rd., Pine Hill, NJ 08021; (609) 782-1222



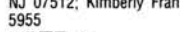
Jackson R/C Racing, Marshall Ave., Jackson, NJ 08527; (908) 905-1593



LBRA Track, 392 Warburton Pl., Long Branch, NJ 07740; (908) 222-5122



Parlor Hobbies, 34 Broad St., Matawan, NJ 07747; Charlie Roder, (908) 566-3158



Pit Stop Dragway

Zepplin Hobbies, 92 Rt. 23N, Riverdale, NJ 07457; Lou Ballini, (201) 831-7717



NEW MEXICO

Cliff Hanger R/C Raceway I, 1515 E. 20th Space D, Farmington, NM 87401; Butch or Joey, (505) 327-3187



Cliff Hanger R/C Raceway II, 2508 Fox St., Farmington, NM 87401; Butch or Joey, (505) 327-3187



The Pit, Las Cruces Hobby Raceway, 1996-A S. Valley Dr., Las Cruces, NM 88001; (505) 524-8530



Racers Inn, 4300 Rankin Ln. NE, Albuquerque, NM 87107; (505) 345-5988

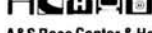


TRC Race Park, 1303 E. 8th St., Truth or Consequences, NM 87901; Gary Whitehead, (505) 894-3211



NEW YORK

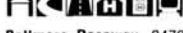
A&D's FastTracks, 1000 N. Main St., Brewster, NY 10509; (914) 279-2065



A&S Race Center & Hobbies, 120 Cayuga St., Canalview Mall, Fulton, NY 13069; (315) 598-2772



Aldon Speedway, 100 Castle St., Geneva, NY 14456; (315) 789-8343



Bellmore Raceway, 2479 Charles Ct., Bellmore, NY 11710; (516) 783-3456 or 783-0105



Brookport Speedway, 6000 Sweden Walker Rd., Brookport, NY 14420; Gil & Betty Glidden, (716) 637-6224



Cars R/C & Guitars, 4360 Seneca St., West Seneca, NY 14224; (716) 674-0905



Catskill Reional R/C Raceway, Glasco Turnpike, Mt. Marion, NY 12456; Artie Jackson (1143 Sawkill Rd., Kingston, NY 12401), (914) 336-5951



Central New York R/C Auto Racers, Martin St., P.O. Box 116, Rome, NY 13440; John Orr, (315) 336-5140



Chippmuck Hill R/C Speedway, 217 Pine St., Theresa, NY 13961; Ted House, (315) 628-5065



D&J's Speedway, 94 Maple St., Croton-on-Hudson, NY 10520; Dan Spatta, (914) 271-5797



Dirt Track, 17 Fairway Dr., Manorville, NY 11949; Billy Wroblewski, (516) 878-0737



East End Off-Roaders, Route 25A at Gulf's Square, Wading River, NY 11792; (516) 929-8844



Gamien's R/C Motor Speedway, 8453 Rt. 11, P.O. Box 1430, Cicero, NY 13039; Dave Wright, (315) 699-2991



GP Racing, 6785 Martin St., Rome, NY 13440; Greg Phillely, (315) 336-5140



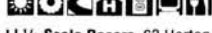
Island Hobbies & Raceway, 410 Commack Rd., Deer Park, NY 11729; (516) 254-6229



Lakeside Raceway & Hobbies, 712 Willow Ave., Ithaca, NY 14850; (607) 272-0248



Latest Hobbies & Raceway, Rt. 25A, Wading River, NY 11792; (516) 929-8844



LI 1/4-Scale Racers, 63 Horton Dr., Huntington Station, NY 11746; (516) 351-5384



Long Island R/C Club, P.O. Box 539, Miller Place, NY 11764; John Strahm, (516) 821-2797 or John Kiernan, (516) 821-8923



Maspeth Raceway, Rust St. & 57th Rd., Maspeth, NY 11378; (718) 894-0800



Norwood Hobbies Raceway, 2-4 S. Main St., Norwood, NY 13668; Tom Jarvis, (315) 353-6621



Penn Yan Speedway, 98 W. Lake Rd., Rt. 54A, Penn Yan, NY 14527; Seneca R/C, (315) 789-8343



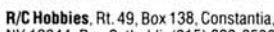
Performance Plus R/C Speedway, The Hobby House, 114 1/2 Jones & Gifford Ave., Jamestown, NY 14701; (716) 488-1772



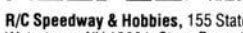
Queens Off-Roaders, 42-12 13th St., Long Island City, NY 11101; (718) 392-5766



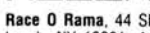
R/C Competition Corner, K-Mart Plaza, Mattydale, NY 13211; (315) 455-8718



R/C Hobbies, Rt. 49, Box 138, Constantia, NY 13044; Roy Catholdi, (315) 623-9536



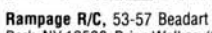
R/C Speedway & Hobbies, 155 State St., Watertown, NY 13601; Steve Pena, (315) 788-1320



Race O Rama, 44 Sharon Ave., Plattsburgh, NY 12901; James Varno, (518) 562-5442 or 643-2678



Raceworld R/C & Hobby, Budd Rd., Phillipsport, NY 12769; Joe Colombo Jr., (914) 754-7664



Rampage R/C, 53-57 Beadart Pl., Hyde Park, NY 12538; Brian Walker, (914) 229-2456



Rapid Transit Raceway, 2104 Broadway, Schenectady, NY 12306; Dick Crounse, (518) 372-0777



Riverside R/C & Hobby, P.O. Box 125, Rt. 126, Beaver Falls, NY 13305; (315) 346-1682



Rochester Raceway & Hobby, 1725 N. Clinton Ave., Rochester, NY 14621; George, (716) 467-2427



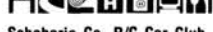
Rock River Model Hobbies, RD 2, Box 297, Rock River Rd., Interlaken, NY 14847; Carl Schmidt, (607) 532-9489



Russet's R/C Racetrack, 1793 Ridge Rd., Ontario, NY 14519; (315) 524-2522



Schenectady R/C Speedway, 955 State St., Schenectady, NY 12307; (518) 370-3747



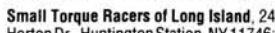
Schoharie Co. R/C Car Club, P.O. Box 126, Cobleskill, NY 12043; (518) 234-4600



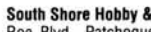
Seneca R/C, 2339 Yerkes Rd., Romulus, NY 14541; (315) 789-8343



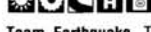
Skaneateles Raceway & Hobby, P.O. Box 102, Rt. 20, W. Genesee St., Skaneateles, NY 13152; (315) 685-8077



Small Torque Racers of Long Island, 24 Horton Dr., Huntington Station, NY 11746; George Franz, (516) 271-1119



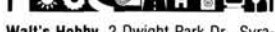
South Shore Hobby & Raceway, 311 W. Roe Blvd., Patchogue, NY 11772; Don Hauck, (516) 758-5567



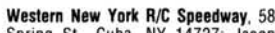
Team Earthquake, The Hobby House, 114/2 Gones & Gifford, Jamestown, NY 14701; (716) 488-1772



Transit Speedway & Hobbies, 5319 Transit Rd., Depew, NY 14043; (716) 684-7368



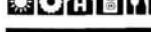
Wall's Hobby, 2 Dwight Park Dr., Syracuse, NY 13209; (315) 453-2291



Western New York R/C Speedway, 58 Spring St., Cuba, NY 14727; Jason Congdon, (716) 968-3586

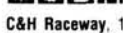


Whitestone Off-Road Raceway, 149-50 15th Rd., Whitestone, NY 11357; Whitestone Hobbies, (718) 767-6767

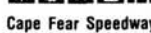


NORTH CAROLINA

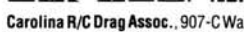
B-N-B R/C Raceway, 7805 S. Airazona Dr., Raleigh, NC 27604; Craig Barber, (919) 878-8407



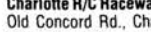
C&H Raceway, 1400 N. Cannon Blvd., Kannapolis, NC 28083; Camera & Hobby Shop, (704) 933-5321



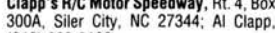
Cape Fear Speedway, 207 Harley Rd., Wilmington, NC 28401; Bob Justice, (919) 762-1184



Carolina R/C Drag Assoc., 907-C Warsaw Rd., Clinton, NC 28328; (919) 592-9489



Charlotte R/C Raceway & Hobbies, 5820 Old Concord Rd., Charlotte, NC 28213; (704) 597-0608



Clapp's R/C Motor Speedway, Rt. 4, Box 300A, Siler City, NC 27344; Al Clapp, (919) 663-3198

Track Directory

KAR R/C Raceway, 14511 Seacrest Rd., Salem, OH 44460; (216) 537-4039



Mid-Ohio R/C Raceway, 5367 Fishburg Rd., Huber Heights, OH 45424; (513) 233-2807



Paulding R/C Speedway, 103 N. Main, Paulding, OH 45879; Virgil Simindinger, (419) 238-0633



The Racer's Choice R/C Hobbies & Raceway, 1298 US Rt. 42, Mason, OH 45040; (513) 398-5539



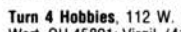
Right Choice Hobbies, 7760 Garrison Ave., Cincinnati, OH 45247; (513) 353-3343



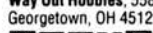
Strongsville Speedway, 13315 Prospect, Strongsville, OH 44136; (216) 572-0430



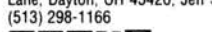
Trusso's R/C Raceway, 100 W. Crain Ave., Kent, OH 44240; Bill, (216) 673-0422



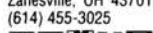
Turn 4 Hobbies, 112 W. Main St., Van Wert, OH 45891; Virgil, (419) 238-6840



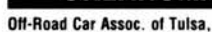
Way Out Hobbies, 5583 Centerpoint Rd., Georgetown, OH 45121; (513) 375-4984



Woodlane Raceway, 2300 E. Dorothy Lane, Dayton, OH 45420; Jeff Simpson, (513) 298-1166



Y-City Hobby & Speedway, 120 S. 6th St., Zanesville, OH 43701; Kevin McKenna, (614) 455-3025



OKLAHOMA

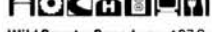
Off-Road Car Assoc. of Tulsa, 1924 W. Pittsburg Ct., Broken Arrow, OK 74012; Mark Seay, (918) 496-8961



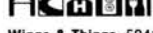
OKC Raceway, 6707 NW 10th, Oklahoma City, OK; (405) 495-4820



RCRC of Oklahoma, 400 S. Vermont, Ste. 104, Oklahoma City, OK 73108; Robert Jones, (405) 942-RCRC



Wild Country Speedway, 127 South Main, Porter, OK 74454; Charles McCollough, (918) 483-8111 or 687-1686



Wings & Things, 5241 S. Peoria, Tulsa, OK 74105; Dave Hendon, (918) 745-0034

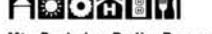


OREGON

Ed's Dirt Speedway, 2809 N. Cherry St., La Grande, OR 97850; (503) 568-4332



The Finish Line R/C Raceway, 560 W. 'D' St., Apt. 6, Creswell, OR 97426; Rod Carothers, (503) 895-4395



Mt. Bachelor Radio Raceways, 225 Centruy Dr., Bend, OR 97701; Rex Baldwin, (503) 389-6160



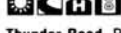
North Lawrence Raceway, 36 N. Lawrence, Eugene, OR 97401; Gary Hill, (503) 484-9857



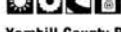
R/C Plus Hobbies Raceway, 2029 25th St. SE, Salem, OR 97302-1130; Ron Smith, (503) 364-9188



R/C Speed Center, 2810 N. Pacific Hwy., Medford, OR 97501; (503) 779-8298



Thunder Road, R/C Hobbies, 1624 Williams Hwy., Grants Pass, OR 97527; (503) 479-8701



Yamhill County R/C Car Club, 722 Morgan Ln., McMinnville, OR 97128; Larry Rucker, (503) 472-7234



PENNSYLVANIA

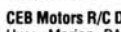
A-1 R/C Speedway, 15 S. Hanover St., Hummelstown, PA 17036; Clyde Felker, (717) 566-3335



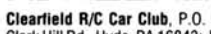
Ansolan, 54 High St., Fairchance, PA 15436; Timothy Abraham, (412) 564-9956



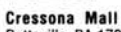
Brian's Raceway, 733 Flexer Ave., Allentown, PA 18103; (215) 435-1862



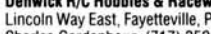
CEB Motors R/C Div., 5743 Molly Pitcher Hwy., Marion, PA 17235; Charlie Booze, (717) 375-4635



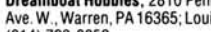
Clearfield R/C Car Club, P.O. Box 297, Clark Hill Rd., Hyde, PA 16843; Joe Welch (814) 765-3045



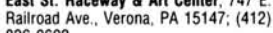
Cressona Mall Speedway, Rt. 61, Pottsville, PA 17901; (717) 385-3506



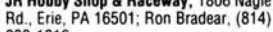
Denwick R/C Hobbies & Raceway, 5601 Lincoln Way East, Fayetteville, PA 17222; Charles Gardenhour, (717) 352-8899



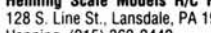
Dreamboat Hobbies, 2810 Pennsylvania Ave. W., Warren, PA 16365; Louie Dussia, (814) 723-8052



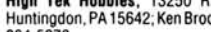
East St. Raceway & Art Center, 747 E. Railroad Ave., Verona, PA 15147; (412) 826-0602



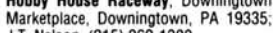
JR Hobby Shop & Raceway, 1806 Maple Rd., Erie, PA 16501; Ron Bradear, (814) 898-1816



Henning Scale Models R/C Raceway, 128 S. Line St., Lansdale, PA 19446; Bill Henning, (215) 362-2442



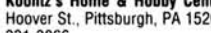
High Tek Hobbies, 13250 Rt. 30; N. Huntingdon, PA 15642; Ken Brooks, (412) 864-5278



Hobby House Raceway, Downingtown Marketplace, Downingtown, PA 19335; J.T. Nelson, (215) 269-1300



Hobby World Raceway, 172 Shillington Rd., Sinking Spring, PA 19608; Mike Wentzel, (215) 678-8760



Koontz's Home & Hobby Center, 1205 Hoover St., Pittsburgh, PA 15204; (412) 331-3866



L&R R/C Racing, 15 S. Main St., Red Lion, PA 17356; (717) 244-1108



Main Hobby Race Center, 501 E. Lackawanna Ave., Olyphant, PA 18447; Dave or Zig, (717) 489-4566



Marshall's R/C Raceway, RR 4, Box 640, Honesdale, PA 18431; Bill or Dot Marshall, (717) 729-7458



Modellbahn Ott Hobbies, 1145 E. Philadelphia Ave. (Rt. 73), Gilbertsville, PA 19525; (215) 367-5925



New Garden Farms/Mushroom Bowl, 812 W. Cypress St., Kennett Square, PA 19348; Drew Pannell, (215) 444-1850



Nittany Dirt Racers, 289 Easterly Pkwy., State College, PA 16801; Mitch Timin, (814) 234-8090



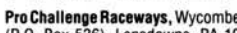
Performance Hobby, 1305 Main St., Slatington, PA 18080; (215) 760-9855



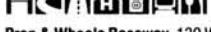
Phantom, 1520 Montrose, Philadelphia, PA 19146; (215) 545-3769



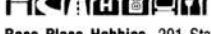
Pit Stop Hobbies, 262 W. Main St., Mount Joy, PA 17552; James F. Stovot Jr., (717) 653-6222



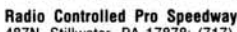
Pro Challenge Raceways, Wycombe Ave. (P.O. Box 536), Lansdowne, PA 19050; Bob Baldwin or Bob Paulange, (215) 622-7651



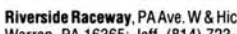
Prop & Wheels Raceway, 139 W. Broadway, Tamaqua, PA 18252; (717) 668-2288



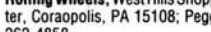
Race Place Hobbies, 201 Station Rd., Quakertown, PA 18951; (215) 538-2394



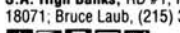
Radio Controlled Pro Speedway, Rt. 487N, Stillwater, PA 17878; (717) 387-0266



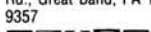
Riverside Raceway, PA Ave. W & Hickory, Warren, PA 16365; Jeff, (814) 723-4211



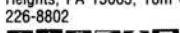
Rolling Wheels, West Hills Shopping Center, Coraopolis, PA 15108; Peggy, (412) 262-4858



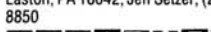
S.A. High Banks, RD #1, Palmerton, PA 18071; Bruce Laub, (215) 377-6123



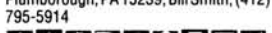
T&T Radio Controlled Racing, Randolph Rd., Great Band, PA 18821; (607) 723-9357



TC's R/C's, 1537 Freeport Rd., Natrona Heights, PA 15065; Tom Coriale, (412) 226-8802



Trains and Lanes, 3812 Newburg Rd., Easton, PA 18042; Jeff Setzer, (215) 253-8850



TV Superspeedway, 492 Jane Dr., Plumburgh, PA 15239; Bill Smith, (412) 795-5914



Wagonhill Hobbyland, RD 3, Box 183, Slippery Rock, PA 16057; (412) 458-4711



RHODE ISLAND

East Bay Hobbies, 629 Metacom Ave., Bristol, RI 02809; (401) 254-0778



R/C Hobbies, 47 Sandybottom Rd., Coventry, RI 02816; (401) 823-4335



SOUTH CAROLINA

Bandits Performance R/C Hobbies, P.O. Box 1533, Darlington, SC 29532; Bryan Howle Jr., (803) 393-3333



Berea R/C Speedway, 707 Sulphur Springs Rd., Greenville, SC 29611; (803) 246-4702



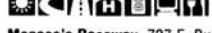
Inland R/C Speedway, 61 Newfound Lane, Myrtle Beach, SC 29577; James Watten, (803) 293-1753



LB Co. Hurricane, 112 Green Acres Rd., Blytheville, SC 29016; (803) 786-0984



Mid-Carolina R/C Superspeedway, 2222 Wintercrest Dr., Rock Hill, SC 29732; Fred Penland, (803) 328-8278



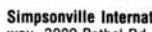
Monaco's Raceway, 727 E. Buena Vista Ave., N. Augusta, SC 29841; Bill Lounson, (803) 279-8982



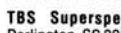
P&S Racing, 210-B Swartz Rd., Lexington, SC 29072; Mark Kinney, (803) 356-0772



Palmetto Raceway, 5023A Rivers Ave., N. Charleston, SC 29418; (803) 566-0068



Simpsonville International R/C Speedway, 3009 Bethel Rd., Simpsonville, SC 29681; Larry Chapple, (803) 297-3572



TBS Superspeedway, Hwy. 151, Darlington, SC 29532; (803) 395-1551 or 332-7117



TBS Superspeedway, 800 Hwy. 15N, Hartsville, SC 29550; Johnny Tiller, (803) 332-7117



Thunder Valley R/C Speedway, 432 E. Church Rd., Easley, SC 29642; (803) 859-2323



SOUTH DAKOTA

Flags of Fun R/C Raceway, 2802 Eglon St., Rapid City, SD 57702; Rex Conrad or Scoop Caskowski, (605) 341-2186



Dakota Off-Road Racers, 2989 W. Br. Co. 12, Aberdeen, SD 57401; (605) 226-0604



TENNESSEE

Crash-n-Burn R/C Raceway, 7030 Maynardville Pike, Knoxville, TN 37918; Gary Daniel, (615) 922-8722



Competition Park, Rt. 10, Box 268, Crossville, TN 38555; Terry or Yvette Bowen, (615) 277-5048



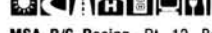
D&M's Downtown Raceway, 2703 US Hwy. 411S, Maryville, TN 37303; (615) 681-8919



The Dirt Dome, 575 W. Poplar Ave., Memphis/Collierville, TN 38017; (901) 853-3428



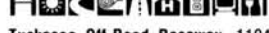
Lail Speedway, 812 Wells Rd., Maryville, TN 37801; Jack or Chris, (615) 983-9207



MSA R/C Racing, Rt. 12, Box 4898, Crossville, TN 38555; D.R. Findley, (615) 456-0027



Smitty's Hobbies & Raceway, 6021 Dayton Blvd., Chattanooga, TN 37415; David Smith, (615) 877-9447



Tuckasee Off-Road Raceway, 1104 Lafayette Rd., Clarksville, TN 37042; (615) 645-2635



TEXAS

AA Raceway, 1617 Toomey Rd., Austin, TX 78704; (512) 474-8277



Anchored Acres Raceway, 1101 Sheppard Rd., Burkburnett, TX 76354; Bob & Patricia Veal, (817) 569-4707



Austin R/C Center, 9702 Gray Blvd., Austin, TX 78758; Caton Cobb, (512) 832-8144



Budget Raceway, RR 1, Box 400 I-35, Bruceville, TX 76630; (814) 859-5296



Checkered Raceway, 8100 Kirkwood, Houston, TX 77072



T&T Eagle, 161 W. Spring Creek Pkwy., #601, Plano, TX 75023; Tony Welborn, (214) 517-0562



Texas Speedway, 6707 Chimney Rock, Bellaire, TX 77401; (713) 661-7137



TK's R/C Park, 2921 Old Claude Hwy., Amarillo, TX 79101; (806) 622-0017



TSR of Wichita Falls, 3703 Seymour Rd., Wichita Falls, TX 76309; Chip Warman, (817) 692-2065



Ty's Toys & Raceway, 129 John Stockbauer, Victoria, TX 77901; Ty Dorsey, (512) 575-6154



Wes Hobby, 980 S. 4th St., Beaumont, TX 77701; Edmond Richards, (409) 839-4929



Wild Bill's, 535 E. Shady Grove, Irving, TX 75060; Lynn Morgan or Jerry Williams, (214) 438-9224



Z Track, 1550 Dunnam Dr., Abilene, TX 79602; Chi Chi, (915) 692-8477



UTAH

Hansen Intermountain R/C Raceway, 8481 W. 2700 S., Magna, UT 84044; Kevin Hansen, (801) 250-8303



W. O. R. Raceway, 30 Brinker Ave., Ogden, UT 84401; IRCRA, (801) 773-0933



VERMONT

Barre Town R/C Club, Wall St. Complex, S. Main (Rt. 14), Barre, VT 05641; Russ Tribble, (802) 888-2860



Bradford R/C Racing, Fairgrounds Rd., Bradford, VT 05033; Rodney Sherburne, (802) 222-9224



Hard Rock Raceway, Astrachan Dr., Bennington, VT 05201; Darren Ricchi, (802) 447-2656



Mike's Hobbies & Raceway, 162 N. Main St., Rutland, VT 05701; Stephen Rachlis, (802) 775-0059



Silver Towers Raceway, Elks Club, North Ave., Burlington, VT 05401; (802) 658-4490



VIRGINIA

A-1 Raceways, 940 Radford Rd., Christiansburg, VA 24003; Kay or Charles Franks, (703) 382-9731 or -1173



Bob's Hobbies & Raceway, 910-J Brandy Creek Dr., Mechanicsville, VA 23111; Bob Wagner, (804) 746-2758



Cooper's R/C Raceway, Rt. 4, Box 12203, Chatham, VA 24531; (804) 724-4182



Crossroads Hobbies R/C Raceway, 1104 W. Main St., Salem, VA 24153; Ronnie Black, (703) 387-3414



Dad's Day Off Model Speedway, Rt. 460, National Dr., Blacksburg, VA 24060; Alan Duffy or Dave Schuh, (703) 633-0236



Front Royal R/C Racing Association, Chester St., P.O. Box 1252, Front Royal, VA 22630; Roger Stoots, (703) 636-2637



H&S R/C Raceway, 565 Electric Rd., Salem, VA 24153; Henry Dowd or Stacy LaPrade, (703) 343-4012



KC's Radio Control & Repair, Rt. 4, Box 312, Trents Ferry Rd., Lynchburg, VA 24503; Curtis or Kim Wright, (804) 384-8596



Lane's End Raceway, P.O. Box 153, Bridgewater, VA 22812; Tony Strother, (703) 828-6655 or 3471



Mid Atlantic Raceway, 89 E. Elizabeth St., Harrisburg, VA 22801; (703) 433-3952



NSWC MWR R/C Track, C1243C Dahlgren, VA 22448; Doris Copen, (703) 663-1730



Precision Hobbies & Raceway, 4000 Mechanicsville Tpke., Richmond, VA 23223; Larry, Don, Chance, (804) 329-8051



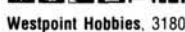
Sterling Truck & Auto Racers, 20921 Davenport Dr., Sterling, VA 22170; Ron Beckman, (703) 444-0333



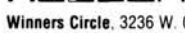
The Tilt-yard, Rt. 1, Box 235A, Dayton, VA 22801; Homer W. Allman Jr., (703) 828-3471 or 828-6655



Trainland R/C Club, 5661 Shoulders Hill Rd., Suffolk, VA 23435; Frank Stevens, (804) 483-2331



Westpoint Hobbies, 3180 King William Ave., Westpoint, VA 23181; (804) 843-4933

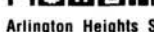


Winners Circle, 3236 W. Clay St., Richmond, VA 23230; (804) 355-7076



WASHINGTON

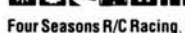
Alfie's, 108 South K St., Aberdeen, WA 98520; (206) 533-6638



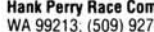
Arlington Heights Speedway, 13629 228th St. NE, Arlington, WA 98223; Shawn Bussert, (206) 435-3442



Firgrove TNT Raceway, 10611 136th E., Puyallup, WA 98374; Walt Hale, (206) 845-7675



Four Seasons R/C Racing, 146 School St. SE, Olympia, WA 98506; (206) 491-2430



Hank Perry Race Complex, Sullivan Rd., WA 99213; (509) 927-1879



NORA Performance R/C, P.O. Box 955 (1673 Cedarvale Rd.), Mt. Vernon, WA 98273; (206) 755-9464



Spokane Indoor Raceway, E. 6422 2nd Ave., Spokane, WA 99212; Mike Gjendern, (509) 534-RACE



Tacoma R/C Raceway Hobbies, 6305 6th Ave., Tacoma, WA 98406; (206) 565-1935



Tearor Raceway, 8012 S. Tacoma Way, Tacoma, WA 98499; Dave Kleinman, (206) 584-8659



WEST VIRGINIA

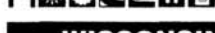
Fairmont R/C Raceway, 430 Fairmont Ave., Fairmont, WV 26554; Ed Kirby, (304) 363-5509



Fulton's R/C Raceway, 2646 Chapline St., Wheeling, WV 26003; James Fulton, (304) 233-5355

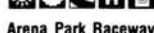


R/C Race Place, Rt. 10, Box 351, Morgantown, WV 26505; (304) 292-0811

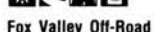


WISCONSIN

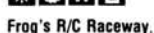
ABC R/C, 1441 B East Main St., Waukesha, WI 53186; Dick, (414) 542-1245



Arena Park Raceway, Kenosha County Parks, 7727 60th Ave., Kenosha, WI 53142; David Delabio, (414) 657-6371



Fox Valley Off-Road Racing Club, Rt. 1, Mayflower Rd., Hortonville, WI 54944; (414) 739-9211



Frog's R/C Raceway, Rt. 1, Phillips, WI 54555; (715) 339-2314 or 339-2958



Grant County Speedway, 2125 Oak, Hazel Green, WI 53811; Brad Birkette, (608) 854-2246

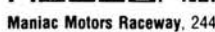


Hobbytown Speedway, 4231 8th St. S., Wisconsin Rapids, WI 54494; (715) 421-1222

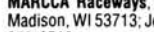
Hobby World Speedway, 3198 London Rd., Eau Claire, WI 54701; (715) 834-0456



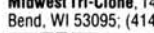
JJ's Dirt Heaven, 6028 County K, Champion, WI 54229; (414) 866-9096



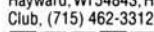
Maniac Motors Raceway, 244 Rt. 1 A1 Rt. H, Kendall, WI 54638; (608) 847-4833



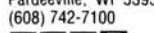
MARCCA Raceways, 1810 S. Park St., Madison, WI 53713; Jeff Gundlach, (608) 273-0519



Midwest Tri-Clone, 144 N. Main St., West Bend, WI 53095; (414) 334-0487



Muskyland R/C Raceway, P.O. Box 1043, Hayward, WI 54843; Hayward R/C Wheels Club, (715) 462-3312



Pacific R/C Club, W7990 Hwy. P., Pardeeville, WI 53954; Rhys Brenner, (608) 742-7100



The Pits Hobby Shop, 786 Morris Ave., Green Bay, WI 54304; (414) 494-4200



R/C Hobby Off-Road Track, Lewison Lane, Viroqua, WI 54665; Dan or Diane Sawwell, (608) 637-8221



R/C Raceways & Hobbies, 181 W. Marquette Ave., Oak Creek, WI 53154; Ralph & Cathy Augustino, (414) 764-9701



R/C Spectacular, Milwaukee Mecca Auditorium, c/o Wisconsin Motorsports Show, 11020 W. Rogers, Milwaukee, WI 53227; (414) 327-3999



Radio Mania, 129 Harrison St., North Prairie, WI 53153; Bill Bowes, (414) 392-9515



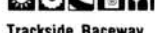
Skipper Bud's Speedway, 1608 River Dr., Stevenspoint, WI 54481; Skip Theroux, (715) 344-5919



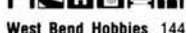
Sparta R/C Raceway, Golf Course Rd., Sparta, WI 54656; Eric Johnson, (608) 269-5861 or 269-6613



Stoltz Raceways, 548 Summit Dr., West Bend, WI 53095; (414) 338-6097



Trackside Raceway, 4405 W. Bradley, Milwaukee, WI 53223; Joel Gish, (414) 355-1910



West Bend Hobbies, 144 N. Main St., West Bend, WI 53040; (414) 334-0487



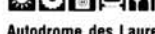
BRAZIL

Hobby Center, SQS 210 B.I.H. Apt. 204, Brasilia, DF-Brasil 70.273; 061-242-0488



CANADA

Aprilia Track, 20 Parsons Ridge, Kanata, Ontario K2L 2N4; (613) 836-2577



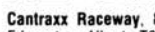
Autodrome des Laurentides, 1003 Rue Lauzanne, Bellefleur, Quebec J7Z 5L8; Jean-Marc Morin, (514) 431-7241 or 438-0907



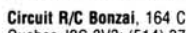
Autodrome des Prairies, 935 Boul. St-Luc, St-Luc, Quebec J0J 2A0; (514) 348-0718



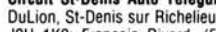
Autodrome Sher-Hobby, 1035 Panneton, Sherbrooke, Quebec; (819) 820-1151



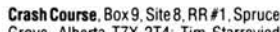
Cantraxx Raceway, 8876-48 Ave. SE, Edmonton, Alberta T6E 5L1; (403) 469-9193



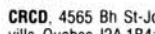
Circuit R/C Bonzai, 164 Cowie, Granby, Quebec J2G 3V3; (514) 372-3622



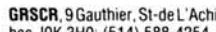
Circuit St-Denis Auto Téléguides, 292 DuLion, St-Denis sur Richelieu, Quebec, J0H 1K0; Francois Rivard, (514) 787-1127



Crash Course, Box 9, Site 8, RR #1, Spruce Grove, Alberta T7X 2T4; Tim Starrevied (403) 963-5795



CRCD, 4565 Bh St-Joseph Drummondville, Quebec J2A 1B4; Jacques Lefebvre, (819) 474-4001



GRSCR, 9 Gauthier, St-de L'Achigan, Quebec J0K 3H0; (514) 588-4254



Krazy Trak, 2412 Miller Ave., Saskatoon, Sask.; Brian & Bart Kendel, (306) 221-7344

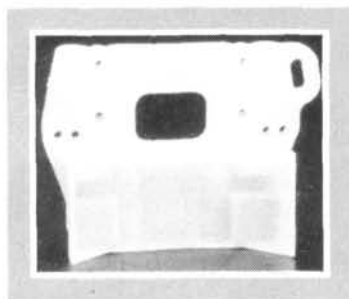


Honda House Motor Speedway, 384 Richmond St., Chatham, Ontario N7M 1P9; (519) 354-5530





SPEED SHOP



RPM RC10 Team Car Rear Bulkhead

RPM's new bulkhead has a slightly wider, taller battery box; tranny brace mounts that are raised to the same height as the Stealth;

additional inside camber-rod mounts; and a wire harness for your motor wires. The two upper shock-tower holes have been moved toward the sides to give the shock tower more support. The injection-molded bulkhead is made of very stiff, white nylon that can be dyed. (Some drilling is required.)

Part no. 7034

Price: \$7.95

RPM Custom Engineered R/C Products, 14978 Sierra Bonita Ln., Chino, CA 91710; (714) 393-0366

RACER'S CHOICE R/C PRODUCTS Fender Mender

Fender Mender body repair/reinforcement liquid adhesive repairs rips and tears in R/C cars, boats and airplanes. It adheres well to most surfaces, including Lexan, metal, plastic, graphite and rubber. Use it on items that are subject to vibration and thermal expansion. Fender Mender resists tears and impact very well. It's also perfect for recoating electrical wiring, locking nuts and bolts, and it provides a waterproof, protective coating on electrical connectors.

Part no. 7037

Price: \$6.50

Racer's Choice, 6N258 Acacia Ln., P.O. Box 405, Medinah, IL 60157; (708) 980-4863.



McALLISTER RACING Dakota "T"

The Dakota "T" is the hot new body from McAllister Racing. Specially designed to fit the new "T" chassis, it has molded-in number plates and a sleek hood bubble to house the long shock struts. Don't settle for less!

Part no. B-165

McAllister Racing, 1000 N. Humphreys St., #204, Flagstaff, AZ 86001; (602) 556-0665.



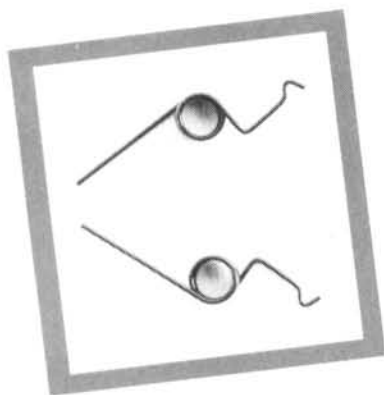
TEAM LOSI Step-Pin Monster- Truck Tires

Team Losi proudly introduces its step-pin monster-truck tires. These great all-around tires work on everything from high-bite to slippery tracks. They're quickly becoming favorites among team drivers, and they fit all standard truck rims.

Part no. A-7636

Price: \$17.95

Team Losi, 113848 Magnolia Ave., Chino, CA 91710; (714) 465-9728.



TRINITY PRODUCTS Extra-Heavy Motor Springs

These extra-heavy motor springs are for stock and extra-hot modified motors, and they work well with silver brushes. They're made of high-temperature steel, so they resist heat better than standard steel springs

and they have a heat-dissipating black plating. They

come packaged in pairs or in economical six-pair bags.

Part nos. RC4492 (1 pair); RC4493 (6 pairs).

Prices: \$2.39; \$12.

Trinity Products Inc., 1901 E. Linden Ave. #8, Linden, NJ 07036; (908) 862-1705.

BOCA BEARING The Secret Weapon

R/C hobbyists dream of having a "secret weapon" that will whip their vehicles across the finish line in the final heat to win the day. Make the dream a reality with Boca Bearing's new, light, incredibly accurate bearing—"The Secret Weapon." The "secret" lies in their extra-



close running tolerances and light plastic shields. These bearings run on a truer path at a higher rpm, so they make your vehicle go faster. They have black bands and are available with or without flanges for 1/4-inch-diameter axles.

Boca Bearing, 7040 W. Palmetto Park Rd., Ste. 2304, Boca Raton, FL 33433; (800) 332-3256.

TOWER HOBBIES 1992 Speedmart Catalog

Tower Hobbies' '92 Speedmart Catalog makes high-speed hop-ups available at low prices, and it also offers performance parts for trucks and new vehicles from the top names in R/C. Tower's great prices and free "zip" handling—favorite features of time/budget-conscious racers—are back, as is Tower's Parts Express section. Parts Express, a comprehensive listing of replacement parts for virtually all popular R/C cars, was a successful addition to the company's '91 Speedmart. Also, your postage/handling charge is just \$3 for any "Parts-Express-only" order—\$2.75 off Tower's usual cost.

Tower Hobbies, Dept. SPMC, P.O. Box 9078, Champaign, IL 61826; (800) 637-4989.



A&L RC10T Lexan Underpan

Like its counterpart for the Team Car, the clear, 0.030-inch-thick Lexan RC10T underpan is a snug-fitting piece that matches the shape of

the stock tub chassis. Use it to protect painted

and anodized chassis from scratches, or paint it to customize your truck's appearance.

Part no. 9551

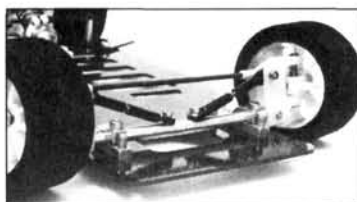
Price: \$9.95

A&L, P.O. Box 2115, Corona, CA 91718; (714) 735-5249.

Descriptions of the products shown on these pages were derived from press releases supplied by manufacturers and/or their advertising agencies. The information given is neither an endorsement of the product by Radio Control Car Action, nor a guarantee of performance or safety. If you write to the manufacturer about any product described here, be sure to say that you read about it in Radio Control Car Action.

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LETTERS

(Continued from page 104)

A DuraTrax saddle-pack battery will fit in Losi and Associated cars if you install the two packs of three cells together and position them lengthwise. Let me get this straight; you already own three rides, and you want to buy another one? If someone invents a radio that allows three or four cars to be driven at the same time, you'll be all set! Awesome, cool and bitchin'... **FM**

ALL FLAVORS AND PUSH-INS, TOO

I'm just starting out in this hobby, and I have a simple question. What, exactly, is a stock

motor? I asked one of my friends, and he said it was a motor with push-in connectors. I asked another friend about it, and he said it was a motor that you put in stock cars. If a stock motor is a motor with push-in connectors, then why aren't the connectors shown in the ads for stock motors that I see in your magazines? If a stock motor does have push-in connectors, do they come installed? I'm really confused, can you please help me?

ALEX GONZALEZ

Stony Point, NY

For events that are sanctioned by ROAR (Radio Operated Auto Racing), a stock motor

must meet the following criteria to be considered legal: its endbell must be permanently attached to its can (the endbell can't be removed, and the timing can't be adjusted); it must use standard—not cobalt—magnets and bronze bushings (instead of ball bearings); it must have no fewer than 27 turns of 22-gauge wire (minimum length of this wire, per armature pole, is 64 inches); and it can't cost more than \$28. Other national sanctioning bodies may have different guidelines, but most organizations adhere to ROAR rules.

There's no connection (pun intended) between stock motors and connectors. You're

(Continued on page 144)

ESP CLODBUSTER RACING TECHNOLOGY

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LIGHTWEIGHT, SUPER STRONG, LADDER FRAME DESIGN

ACCEPTS ALL STOCK TAMIYA COMPONENTS...\$69.95

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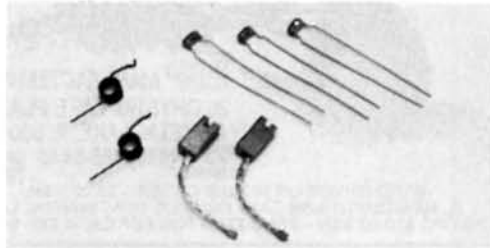


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Oval Performance Kit — #7502 — used by Chris Schneider to win the stock division at the Michigan 500. This kit contains super heavy black brush springs and a pair of our legendary soft Venturi brushes. Also included are three high frequency capacitors for your motor. Retail \$6.99.



Liquid Horsepower — #7505 — used by ROAR National Champions Frank Calandra and Willy Decker. This is a revolutionary commutator and brush additive that leaves the competitors in the dust, searching for speed. Use to clean and condition, as well as power additive. Retail \$4.99.

TEAM Class News

The Spring Thing is here!!

Now available from Team Class is a tool that will allow you to tune your brush springs perfectly. The "Spring Thing" uses an actual motor brush hood to test the spring in its race environment. This handy gauge will correctly measure the tension of various brush springs. It is accurate enough to measure production tolerances in springs of the same type. Get the edge on the competition, ask your dealer for the Team Class "Spring Thing".

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 Fax: (315) 732-2034



Better get out of the sun, Jayson. Although some of the recurring "characters" who appear in Car Action are obviously fictitious, e.g., the Ayatollah of Radio Controlla, Sergeant Major-Danger, the Dirt-Master General and John-Clod Van Dammit, all the names that have appeared in bylines for the past few years are real. Is yours? LA

(Continued on page 171)



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JACK'S INFERNO

(Continued from page 125)

POTENT POWERPLANT

Without the right engine, even the trickiest chassis wouldn't be sufficient to win against the caliber of competition that Johnson bested at the Off-Road Championship. Johnson's Inferno is powered by one of the brand-new Paris O.S.* RX-B .21 engines. This standard RX-B is subtly tuned by motor master Ron Paris for a blend of both power and efficiency. I know it had power: Johnson's carburetor was set at about three-quarter throttle the entire weekend; it never opened fully! To keep dirt out of the carb, Johnson used a brand new dual-element O.S. air filter called the "Super Filter," which uses a more porous outer element with a denser inner element to trap minute particles. Attached to the RX-B was a Paris Racing AL 650 tuned pipe. This pipe is specifically tuned for an engine like the RX-B and delivers a smooth compromise of low-end torque and top-end speed.

To mount the engine on the chassis, Johnson used Kyosho's aluminum heat-sink engine mounts, which are "fin-cut" to provide more surface cooling area. Fuel is a big factor in gas racing; the wrong type of lubricant or nitro content can cause overheating and poor performance. Johnson's Losi teammate and co-worker Gary Kyes is an old hand at gas racing, and he even mixes his own fuel. Johnson used "Gary's Thai Juice" with only 10 percent nitro to feed his hungry O.S. engine.

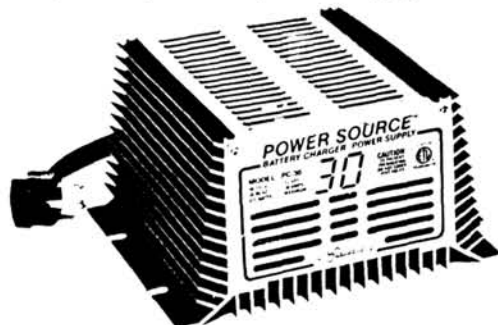
RIOTOUS REBOUND

The suspension on Johnson's Inferno is bone-stock. Kyosho shocks at all four corners were filled with 30WT silicone oil (rumored to be released shortly by Team Losi) and fitted with the kit's springs. Jack retained the stock Inferno linkage (threaded rods only—no turnbuckles), and set the front end with approximately 2 degrees of toe-in and 2 degrees of negative camber. The

(Continued on page 158)

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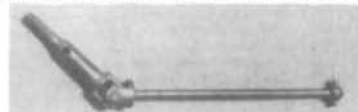
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JACK'S INFERNO

(Continued from page 150)

Inferno's rear toe-in is adjustable by means of three rear A-arm mounts. Johnson used the mount that gives the rear wheels 2 degrees of toe-in for additional stability. Rear camber was set at approximately 2 degrees.

Completing Johnson's winning package was a full set of Boss* TR-8BF1 tires on Inferno rims; a JR Propo R-756 transmitter with PCM receiver; and a 5-cell pack of Sanyo 1000mAh batteries to power the on-board electronics.

Congratulations to Jack Johnson on his decisive win at the Southeast Gas Off-Road Championships. I'd also like to wish Jack and the rest of the ROAR team good luck at this summer's IFMAR 1/8 Scale Off-Road World Championships, which will be held in Germany. Who knows? Maybe we'll have to reprint this article with the title "Inside Jack Johnson's World Champion Kyosho Inferno".

*Here are the addresses of the companies mentioned in this article:

Kyosho/Great Planes Model Distributors.
Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718.

(Continued on page 160)

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JACK'S INFERNO

(Continued from page 158)

Paris Racing, 4254 Independence St., Chino, CA 91710.

JR Propo Remote Control; distributed by Hobby Dynamics Distributors, P.O. Box 3726, Champaign, IL 61826.

O.S./Great Planes Model Distributors, P.O. Box 9021, Champaign, IL 61826.

Boss; distributed by Ofna Racing Division, 18 Technology, Ste. 159, Irvine, CA 92718. ■

TEXAS BIGGIE

(Continued from page 128)

Whether he's under the wing of Ron Paris or not, he's easily one of the elite 1/8-scale racers. However, he expected some formidable competition. During qualifying, Barrera, a relative newcomer to 4WD, performed well with his new BMT/Racers Choice/Speedline team. It was obvious that

the hometown crowd wanted Barrera to give Swauger a run for his money, but off the line, Swauger was in rare form.

He led with with Barrera hot on his heels and Blacketter in 3rd. Swauger's self-confidence showed, as he cornered the car only inches from the boundary dots. The pressure was on Barrera to perform, but he faltered ever so slightly. His first pit stop was slow, and during his second pit stop, the car hit a patch of fuel in the lane and spun sideways into the wall, costing him nearly 8 seconds. Swauger's consistent driving never wavered, and his lap times improved as he settled into a groove. The race for 3rd tightened up between Blacketter, Weatherby, (who was having an out-of-body experience on the drivers' stand) and Tamburri. Weatherby and

Blacketter exchanged positions several times during the last minutes of the race, but when Blacketter's car began to traction roll, Weatherby took over the reins. At the checkered flag, it was Weatherby in 3rd, Scott Barrera in 2nd, and the (big) kid on the block, Swauger, with the win.

This time in particular, I'm very sorry I couldn't cover all the racing during the weekend. There was some spectacular driving in the other Mains. Special thanks go to the officials of RCRC of Dallas and to the track directors of Indy R/C World (if for no other reason than for putting up with me for the weekend). They orchestrated a very fine race and created an atmosphere that everyone could enjoy. Nice going, guys! ■

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LETTERS

(Continued from page 144)

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I'm 12 years old, and I've been racing R/C cars since I was 10 and reading *R/C Car Action* since I was nine. I really like the articles, "Pit Tips" and the stuff on how to set up cars for racing.

My dad and I built a dirt track in our barn. We race together with my little sister. She's pretty good, but I can still beat her.

The posters you publish are really cool, and we've hung them in the barn. Are you ever going to print a poster of Brigitte? She's really pretty, and I'd like a poster of her to hang up at my racetrack!

Thank you for reading my letter. You should print it to see if other guys want a poster of Brigitte, too.

TOMMY WADE
Metropolis, IL

Well, Tommy, we showed your letter to Brigitte, and although we couldn't get an answer out of her, it did have an unexpected effect: we've never seen her blush before.

FM

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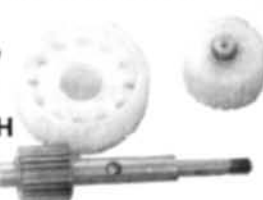
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McAllister Racing, 1000 N. Humphreys St., Ste. 204, Flagstaff, AZ 86001; (602) 556-0665.

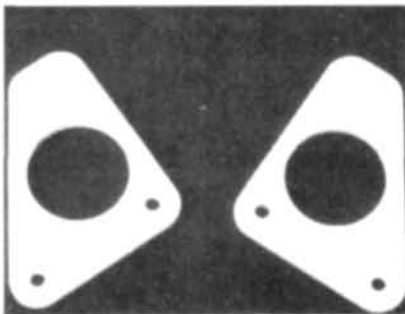


TRAXXAS RAD-2

The new RAD-2 buggy offers you the features and sophistication of exotic racing machines at an entry-level price. The kit comes with a body, a wing, a motor and a mechanical speed controller. The RTR buggy comes fully assembled and has a forward/reverse ESC and a pistol-grip radio. Both versions are made of durable T-6 aluminum and nylon, and they include a Pro-Series, 48-pitch, three-gear transmission; an adjustable slipper clutch; a reliable planetary diff with metal gears; "splined," U-joint drive shafts; an independent suspension with almost 2 inches of travel; long, adjustable, oil-filled shocks; 2.15-inch-diameter racing wheels; and an adjustable (using turnbuckles) suspension. (The RAD-2 uses standard spur gears.)

Part nos. 2301 (kit); 2306 (RTR).

Traxxas Corp., 12150 Shiloh Rd. #120, Dallas, TX 75228; (214) 613-3300.



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Trinity Products Inc., 1901 E. Linden Ave. #8, Linden, NJ 07036; (908) 862-1705.



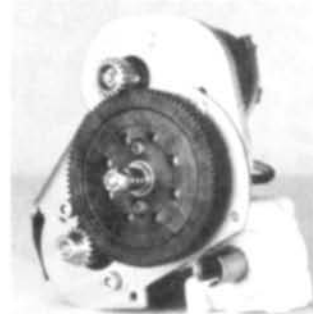
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Part nos. 1036 (1/10 scale); 1038 (1/10-scale superspeedway); 1040 (1/12 scale).

Prices: \$9; \$9; \$8.

TD Enterprises, P.O. Box 3301, Lexington, OH 44904; (800) 253-7229.

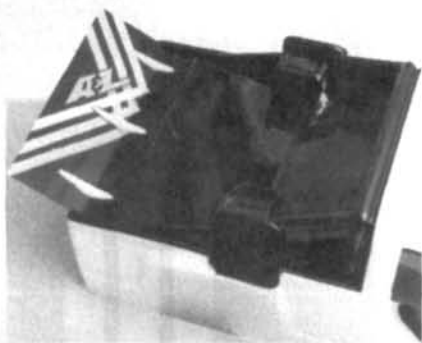


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Alligator Designs, P.O. Box 68838, Schaumburg, IL 60168; fax (708) 398-1524.



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Part no. 1036

Price: \$2.50

A&L Mfg., P.O. Box 2115, Corona, CA 91718; (714) 735-5249.



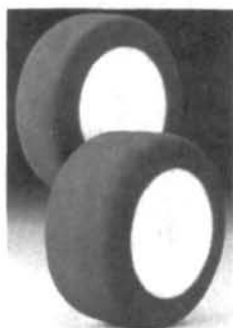
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Bolink's new $\frac{1}{10}$ -scale front Progressive springs have a special tapered design that allows the tension to increase as they're depressed. Made of a high-quality material so that they won't collapse, they're available in pairs or sets of 10—one pair in each of the five styles.

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Prices: \$8 (set); \$2 (each pair).

Bolink R/C Cars Inc., 420 Hosea Rd., Lawrenceville, GA 30245; (404) 963-0252.



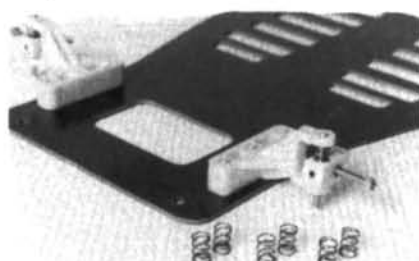
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Great Planes Model Distributors, 1608 Interstate Dr., Champaign, IL 61821; (217) 398-3630.



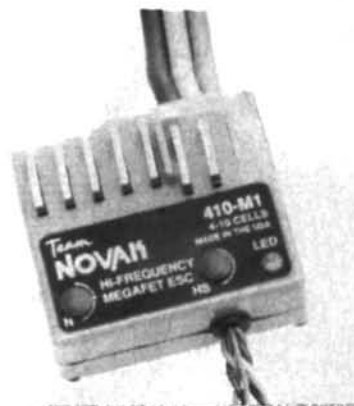
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Stock front ends can't always handle the rough spots on the track. To solve this problem, Bud's Racing has developed the Super Machine front end, which can be attached to any $\frac{1}{12}$ - or $\frac{1}{10}$ -scale car that has Associated-type suspension arms. It will increase front-end suspension travel by 50 percent, and it features oversize kingpins that reduce front-end play; kingpins that are attached to the steering block with setscrews instead of E-clips; four, large, color-coded suspension springs (available in different tensions); and 4-40 locknut stub axles. Replacement parts/springs are also available.

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Part no. 1610

Price: \$140

Novak Electronics Inc., 128-C E. Dyer Rd., Santa Ana, CA 92707; (714) 549-3741.

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